### GEOLOGICAL SCIENCES

**ALUMNI NEWSLETTER** 2010

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**Editor**: Kevin L. Shelton  
**Composition**: Marsha Huckabey  
**Printing costs of the Newsletter are provided by the Geology Development Fund.**

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### Roster

**Assistant Professors**
- Miriam Barquero-Molina (University of Texas, 2009)  
  - Field methods
- Marie-Helene Cormier (UC Santa Barbara, 1994)  
  - Marine tectonics
- Karyn Rogers (Washington University, 2006)  
  - Biogeochemistry
- Mitchell Schulte (Washington University, 1997)  
  - Biogeochemistry

**Associate Professors**
- Martin Appold (Johns Hopkins University, 1998)  
  - Hydrogeology
- Robert L. Bauer (University of Minnesota, 1982)  
  - Precambrian geology
- Francisco Gomez (Cornell University, 1999)  
  - Paleoseismology and neotectonics
- Cheryl A. Kelley (University of North Carolina, 1993)  
  - Aquatic geochemistry
- Kenneth G. MacLeod (University of Washington, 1992)  
  - Paleontology and biogeochemistry
- Eric A. Sandvol (New Mexico State University, 1995)  
  - Seismotectonics
- Alan G. Whittington (Open University, 1997)  
  - Crustal petrology

**Professors**
- Mian Liu (University of Arizona, 1989)  
  - Geophysics
- Peter I. Nabelek (SUNY, Stony Brook, 1983)  
  - Trace-element geochemistry
- Kevin L. Shelton (Yale University, 1982)  
  - Economic geology
- Michael B. Underwood (Cornell University, 1983)  
  - Sedimentology

**Professors Emeriti**
- 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
- William D. Johns (University of Illinois, 1952)  
  - Clay mineralogy

**Staff**
- Alice Thompson, administrative assistant
- Marsha Huckabey, administrative associate I
- Carol Nabelek, research chemist
- Sara Rowley, senior research/lab technician
- Stephen Stanton, library information specialist II
From Our Department Chair . . .

This past year has been a time of great accomplishments that can be attributed to the hard work and dedication of our faculty, staff, students and alumni. The National Research Council recently released its rankings of doctoral programs in the earth sciences, which confirm the increasingly high quality of our program. Highlights of our activities are presented throughout the Newsletter and reflect the spirit and excitement of teaching, learning and discovery that underlie our success.

In academia, there is little that rivals the satisfaction of hiring faculty members and watching them succeed. Assistant professor Martin Appold was promoted to the rank of Associate Professor with tenure. Best wishes for his continued success!

As you read through the Newsletter you will see that all of our faculty members are involved actively in research and presentations at national and international conferences that bring recognition and prestige to our department. Please join me in celebrating their notable accomplishments. In particular, I draw your attention to Milene Cormier’s studies in the aftermath of the Haiti earthquake. You can read more about this exciting project later in the Newsletter.

We continue to attract talented students at both the master’s and doctoral levels. This fall we have 34 graduate students in residence, our largest number in recent history. This past year they presented numerous talks at national and international conferences, published papers, and received research grants and fellowships based on proposals that they wrote. Seven of our students completed graduate degrees this past year. William Alward, Gina Applebee, Michael Hillix, Jennifer Poole, Danielle Robinson and Nathan Rossman finished master’s theses, and Geoffroy Avard finished his doctoral degree. We will miss each of those who are leaving. Several other students are planning to defend their theses this semester.

We are fortunate to have a new group of talented graduate students. Thirteen students arrived this past January and this fall. Alzubair Abousaif (BS from Omar Almukhtar University, Libya) will work toward his master’s studying neotectonics with Paco Gomez. Jonathan Bennett (BS from Northwest Missouri State University) will pursue his master’s studying structural geology with Bob Bauer. Chris Burrows (BA from University of Missouri) will pursue his master’s studying models for carbon sequestration with Martin Appold. Hui-Chun Chen (BS from National Taiwan Normal University) will work toward her master’s studying petrology with Peter Nabelek and Alan Whittington. Yanying Chen (BS from Chengdu University of Technology) will work toward her master’s in petrology with Peter Nabelek and Alan Whittington. M. Koray Ekinci (BS from Hacettepe University in Turkey) will study for his master’s with Mike Underwood on permeability in deep marine sediments. Benjamin Gross (BS from Washington University) will work toward his master’s studying petrology with Alan Whittington and Peter Nabelek. Mark Grzovic (BS from Lamar University) will work toward his master’s in petrology with Alan Whittington and Peter Nabelek. Shannon Haynes (BS from West Virginia University) will work toward her master’s in paleontology with Ken MacLeod. Feng Lin (MS from University of Science and Technology China) will pursue his doctoral degree studying geodynamics with Mian Liu. Page Quinton (BS from Columbus State University) will pursue her master’s studying paleontology with Ken MacLeod. Andrew Thomas (BS from Missouri State University) will be working on his master’s studying structural geology with Bob Bauer. Jiyang Ye (MS from Institute of Crustal Dynamics, CEA) will pursue his doctoral degree with Mian Liu studying geophysics.

We received a number of very strong applications for graduate study this year. Although competition is keen among universities to attract highly qualified graduate students, our ability to attract quality students to MU is a reflection of both the strength of our programs and our ability to provide competitive financial support to students. The College of Arts and Science continues to provide funds for TA stipends. However, to be competitive with peer institutions, we supplement these stipends with department scholarships that are provided by a various endowed student scholarships.

In summary, we’re doing great! However, we would not be able to make competitive offers to attract these quality students without the help of our alumni and friends scholarship funds. We thank you for your commitment to our students!

Our undergraduate program has approximately 45 students. The departmental scholarship funds that
our alumni have supported are critical in allowing us to attract and retain some of the best students on campus. In addition to our scholarship program, our recently instituted departmental Undergraduate Research Program is supporting the completion of three senior theses this coming year. Recently graduated Logan Hill received a prestigious graduate fellowship from the Society of Economic Geologists Foundation, which will help support him in graduate studies at the University of Arizona.

Summer 2011 marks the 100th anniversary of field studies at Camp Branson. Please visit our Camp Branson Centennial Reunion web page at fieldcamp.missouri.edu/bransoncentennial for information about our July 16–17, 2011 reunion.

On behalf of the faculty, students and staff, I want to thank those of you who continue to support our department through your annual gifts.

I would like to call particular attention to a recent testamentary planned gift from Ed and Connie Williamson, which will eventually provide more than one million dollars for unrestricted support of departmental educational activities.

Enjoy the Newsletter, and remember to keep us informed of your activities.

Sincerely,

Kevin L. Shelton
Chairman and
E.B. Branson Professor
Faculty News

Martin Appold spent much of his time last year working with four graduate students on their research projects. Doctoral student Zachary Wenz continued his research on the composition of ore fluids of Zn-Pb deposits in the Ozark Plateau and synthesized much of the data he had collected over the previous three years. Master’s student Mark Leatherman continued fluid inclusion and reaction path modeling work on the Beowawe geothermal field in northern Nevada. Ajit Joshi came to MU from Nepal to start a master’s degree and model a mechanism for episodic fluid flow in the Eugene Island hydrocarbon field in the Gulf of Mexico basin. Michael Pelch returned to MU after completing his BS in geology here and serving five years in the Marine Corps. He’s working on a master’s degree studying the composition of fluid inclusions in the Illinois-Kentucky fluorite district. Martin taught Groundwater Hydrology, Groundwater Modeling, and a new course called Mineral and Energy Resources of the Earth. Martin was also pleased to receive tenure from MU this past year.

Bob Bauer’s final summer as the field camp director at Camp Branson was more eventful than usual. A five-foot snow fall in early May covered the camp and much of the high country upstream. Although the snow in camp was gone by the time students arrived in late May, melting in the mountains produced near-record flows on the Popo Agie River through camp by early June. The high melt waters took out the foot bridge connecting Bob’s cabin with the main part of camp, and Bob is currently working with local contractors, engineers, and the University’s Risk Management department to try to replace the bridge by next summer. Despite stepping down from the field camp director’s position, Bob continues to be actively involved in promoting field instruction. This summer, he served as a co-convener of a workshop in Bozeman, Montana on “Teaching Geoscience in the Field in the 21st Century.” The workshop was part of the nationally acclaimed series On the Cutting Edge – Professional Development for Geoscience Faculty. As the department’s director of graduate studies, Bob coordinated a very active recruiting season last year that produced a strong class of entering graduate students this past fall. We continue to attract highly qualified international applicants. Among the eighteen students in Bob’s Continental Tectonics class this fall, eight are international graduate students. To help prepare our international students to write more effectively, Bob participated in a workshop this past summer on working with “second language writers.” Bob also worked in the field this summer with Justin Tiffany, who is completing an MS thesis project supported by the U.S.G.S. educational mapping program (ED-MAP). Justin is analyzing the complex fault and fold structures along the interchange between south Derby Dome and Sheep Mountain anticline. The research includes several seismic reflection lines that were also used last summer as advanced projects at the field camp. Bob’s courses included Structural Geology, Advanced Structural Geology, and Field Camp last year. This fall Bob is teaching Continental Tectonics, and he is continuing to coordinate the department’s scientific writing program for our BS majors.

Miriam Barquero-Molina has greatly enjoyed her first year at the University of Missouri and managed to keep herself quite busy. In the fall semester she taught Principles of Geology and one of our themes courses about the Moon. The following spring semester she was again at the helm of our Principles course, and saw the class enrollment increase a bit. During the spring she also taught Sedimentology to our geology majors. Thanks to an invaluable donation of siliciclastic and limestone thin sections from the late D.K. “Dai” Davies – bequeathed to our department by his widow, Ruth Davies – she was able to furnish a petrographic-intensive, semester-long laboratory for this course. In her third semester at MU, Miriam is again teaching Principles of Geology, where enrollments have gone up once again, and she is also teaching Surficial Processes and Landforms to our geology majors. Miriam has found herself surprisingly enjoying the teaching of large-enrollment introductory courses, much more than she imagined she would. After feeling some initial trepidation at having to teach large numbers of students in the auditorium, she has discovered that bringing technology into the classroom and providing more interactive instruction through technology make teaching large enrollment courses quite enjoyable. Even better, students seem to respond positively to technology as well! Miriam has also greatly enjoyed getting to know and being able to help our undergraduate majors through her role as director of undergraduate studies.

Milene Cormier co-led a three-week expedition to the East Pacific Rise in December 2009 to recover
Ray Ethington manages to find his way to the department almost daily to continue his pursuit of Ordovician conodonts. Much of his effort is spent on collaborative efforts with John Repetski and with Jim Miller of Missouri State University in Springfield. One focus is on specimens from northern Iowa and adjacent parts of Minnesota and Wisconsin with the intent of expanding upon Furnish’s 1938 seminal study of Lower Ordovician conodonts, to bring those important faunas into compliance with contemporary taxonomic and biostratigraphic practices. Another project involves faunas in sections in westernmost Utah that straddle the Sauk/Tippecanoe sequence boundary and offer promise of clarifying and precisely defining this significant episode in Laurentian stratigraphy. More time than he anticipated has been devoted to preparing a chapter on the pre-St. Peter Ordovician stratigraphy of the Ozark region to be included in a proposed volume dedicated to the memory of the late James Lee Wilson, but the end of that effort seems to be in sight. He continues to respond three to four times each month to inquiries from people who believe they have found meteorites, dinosaur remains, a pelvic bone, or an unknown something; commonly they wonder if their discovery is of value—Ray’s standard reply is that he does not do appraisals, but he is sure the object of concern is worth whatever is offered for it.

Tom Freeman finished the second edition of his Environmental Geology Laboratory manual in time for showing by his publisher, John Wiley & Sons, at GSA-Denver. Tom’s timely cover story of BP oil flooding Mississippi Delta wetlands and marshes is a more troubling image than the myriad pictures of damage to open water and beaches. His new edition also includes a new exercise titled Climate Change, which is addressed in most physical geology textbooks but yet to be covered in lab manuals — another ‘first’ for Tom, along with his illustrating with Google Earth. He also completed the commemorative edition of his new title, Geology Field Methods, in celebration of the 100th year of Camp E.B. Branson. Tom, Peggy, and family look forward to returning to Camp Branson next summer for the reunion. The Freemans are enjoying a bit of travel when Tom can get away from his computer workstation — including GSA-Denver and the related tour of Estes Park. Tom also continues to serve on the Geology Advisory Board of their beloved University of Arkansas. This fall’s UA meeting includes attending Tom’s 60th high school reunion in his hometown of Hot Springs National Park. (Yes, the 60th could happen to you, too!) In closing, Tom returns Jerry Yunker’s greeting in last year’s alumni newsletter, recalling Jerry’s attentive driving of one of our school buses (FC ‘78) and crowding BFOs off of Wyoming roads. Fond memories!

Paco Gomez and his research group, which currently consists of both graduate and undergraduate students, have had a rewarding year. With renewed funding from the National Science Foundation (NSF), Paco continued his fieldwork in Jordan and Lebanon using Global Positioning System (GPS) to measure the active movement of the Dead Sea fault. As part of the NSF Partnerships for International Research & Education (PIRE) project on intraplate earthquakes in north China, Paco, along with Prof. Mian Liu, organized a faculty-led, study abroad class that focused on geohazards and society in China. Student research supervised by Paco has continued in numerous aspects of neotectonic and surficial processes. Graduate student Nathan Rossman completed his thesis that involved quantifying the bed-load sediment transportation in surface and subsurface settings at Tumbling Creek Cave, near Protem, Mo.
Bobbie Pennington, working on the NSF PIRE project, is finalizing her analysis of fault scarps and tectonic processes in the Huailai Basin northwest of Beijing. Bjorn Held has been using satellite radar imagery and air photos to measure the rates of movement on the Bull Lake Creek Landslide in the Wind River Range of Wyoming (about 35 miles north of Camp Branson). In fall 2010, they were joined by a new graduate student, Alzubair Abousaif, who plans to initiate new research on earthquakes in northern Libya. Three undergraduate students have been conducting research under Paco’s supervision. William “Joey” Cochran is working with GPS data from Jordan for his senior thesis project; he traveled to Jordan this past summer to help collect the data. For his senior thesis, Nathan Hopkins is using satellite radar imagery to document and measure ground motions resulting from periglacial processes (permafrost-related motions in Alaska and rock-glacier movement in the Rockies). Under the auspices of the NSF PIRE project, Josh Myers is also applying satellite radar imagery to assess ground subsidence and fissuring in the city of Xi’an, China. Paco has also had an enjoyable year teaching. In addition to regular offerings of introductory geology and surficial processes, he also taught a section of Themes in Geology that focused on earthquakes and archeology in the Middle East.

**Glen Himmelberg** is now in his third year as chair of the Mathematics Department at MU. Although the first two years presented many challenges, Glen believes that the math department has reached a stage where it is now not too much different from other departments, other than being much larger and responsible for substantial service teaching. With the continuing increase in MU enrollment each year and the loss of faculty to other universities and retirements, Glen reports that the department is severely stretched to meet its teaching obligations. However, he says that with the support of Dean Mike O’Brien, the mathematics department was able to hire a new assistant professor last year and is recruiting for two new faculty members this year. Glen says that challenges remain, but the faculty and staff are dedicated to advancing the goals and mission of the department and the university.

**Cheryl Kelley** continued her work on methane production in hypersaline environments. This past year saw field trips, accompanied by master’s student Jennifer Poole, to Guerrero Negro, Baja California Sur, and to the Don Edwards National Wildlife Refuge near south San Francisco Bay, Calif. Both sites have ponds that are encrusted with gypsum and halite and in which methane is produced. Jennifer defended her master’s thesis in May on the substrates used by the methanogens in these environments. She is currently working for Newfield Exploration on an internship. Audrey Sima, another masters student of Cheryl’s, started a position in July with Environmental Works Inc., an environmental consulting firm located in Springfield, Mo. Audrey should finish up her masters work on the degradation of organic matter in karst systems this fall. In the classroom this past year, Cheryl enjoyed teaching an honors section of Earth Systems and Global Change, as well as Environmental Geology and Global Water Cycle.

**Mian Liu’s** research and teaching continue to focus on the NSF-funded PIRE (Partnerships for International Research and Education) project. This summer, Mian and Paco Gomez, assisted by Milene Cormier and Eric Sandvol, led a study abroad program to China. They took eleven undergraduate students (ten from our department) to Beijing, Tangshan, Datong, Xi’an, and Chengdu to study geology and to appreciate the close interactions between geology and human society. In Tangshan, a city completely rebuilt on the ruins of the 1976 earthquake that killed nearly a quarter million people, the class visited the sites of collapsed factories and ground ruptures. In Chengdu, students immersed themselves in the intricate interactions between human and nature, and they witnessed how landslides, earthquakes, and other geological processes impact the rapid economic development in China. The trip to Beichuan, where thousands of residents including the entire population of an elementary school were buried by giant landslides in the 2008 Wenchuan earthquake, was heart-wrenching and sobering. There were, of course, many fun moments, such as climbing the Great Wall, seeing the giant pandas in the Panda Conservatory, and hanging out with Chinese students. Both the department and the PIRE grant provided partial support to the trip, making it affordable for our students. Besides the PIRE project, Mian and his students have been working on crustal deformation in the western United States, fault evolution of the San Andres plate boundary zone, subduction and mountain building in the Andes, and Tibetan tectonics, all supported by the
National Science Foundation and NASA. Mian is working with Shay Romine, a master’s student, on intracontinental earthquakes; this fall he welcomed Feng Lin and Jieyang Ye, both doctoral students, to join his group.

Ken MacLeod welcomed two new master’s students this fall. Shannon Haynes graduated in 2009 from the University of West Virginia and spent last year working at the Smithsonian Institution’s Museum of Natural History. She will be presenting the results of some of her work there at the GSA annual meeting in Denver. Shannon is initially working on Upper Cretaceous rocks from Tanzania, looking at foraminiferal paleoecology and bulk rock geochemistry. Page Quinton graduated last June from Columbus State University. She has been finishing data entry for the MU conodont database project and is exploring possible projects related to conodont paleoecology and early Paleozoic paleoceanography. Returning master’s student Kelsey Putman is getting close to finishing and has recently generated novel data indicating that a change in lithology in the Upper Ordovician sequence in Iowa and Minnesota was more likely caused by a change in the source of local waters than climate change. She will be giving a talk at the GSA meeting on this topic. Otherwise, Ken continues to collaborate with alums Carolina Isaza Londoño and Álvaro Jiménez Berrocoso (and a number of other colleagues) on the study of Late Cretaceous rocks and fossils from the North Atlantic and Tanzania. He also looks forward to celebrating Carolina’s and Scott Lepley’s upcoming wedding.

Peter Nabelek continued his metamorphic and igneous petrology research. He continues his collaborations with Alan Whittington, former student Mona Sirbescu and Sven Morgan of Central Michigan University and with Anne Hofmeister of Washington University. During the past summer, Peter attended a metamorphic field trip in the Canadian Rockies, and then continued his northern excursions with a trip to the Arctic. The Arctic project is to explore emplacement of basaltic sills and associated contact metamorphism in a Proterozoic sedimentary basin. The project is supported by the Geological Survey of Canada. Starting this fall, Peter has four new students who will be working on research including granite crystallization, garnet growth in metamorphic rocks, and modeling paleo-heat flow in the Arctic region.

Karyn Rogers has managed to get through the year without any trips to malaria-prone regions, but her research on the Cerro Negro volcano in Nicaragua is continuing. Last spring, Karyn and former graduate student Sarah Stephenson presented some of their preliminary results from this research at the Astrobiology Science Conference in League City, Texas. Rachel Barker was able to participate in a research cruise to Guaymas Basin last fall aboard the R/V Atlantis, and is now working hard to find novel microbes that use organic sulfur compounds. Also, Rachel spent this past summer in Houston as an intern for High Mount. She is aiming to finish her MS research within the next year and will be supported by an MU Research Council grant. Karyn’s lab is also happy to welcome Sara Rowley as a senior laboratory technician. Sara comes to us from BYU and is already making an impact on the daily functioning of the lab. Randall Bonnell joins the lab for a second year as an undergraduate research assistant and is looking forward to growing methanogens as the lab tries to understand the energy requirements for these organisms on early Earth and Mars. Recently, Karyn was selected as an organizer for the Biogeochemistry Thematic Working Group at the upcoming RIDGE2000 Community Meeting in Portland, Oregon. Karyn’s new graduate class in advanced geomicrobiology was a success last spring and this fall has Karyn busy with more than 300 students in Planet Earth and five graduate students in Low Temperature Geochemistry. Next semester, Karyn will be teaching an honors section of Principles of Geology.

Eric Sandvol’s seismology research group has focused its efforts on analyzing the recent data that it has collected in the Andes, Tibet, and north China. Xiaofeng Liang has joined the group as a postdoctoral researcher to analyze data collected throughout the Tibetan plateau. Xiaofeng received his doctoral degree from Peking University last year. The ASCENT seismic array is a very large collaborative seismic array that covers much of the central and northern Tibetan plateau. The data from this array are helping researchers better understand the mechanisms for the uplift and growth of the Tibetan plateau. The analysis of the data has already yielded new and important
Kevin Shelton completed the first year of his second five-year term as department chair. As a welcome break from administrative duties, Kevin spent a week in June sampling gold deposits at the north end of the Yellowknife greenstone belt. Following fieldwork, he flew south to join Lois and Emily for a week of vacation in the Canadian Rockies. In July, Kevin traveled to the Isle of Man with Jay Gregg (Oklahoma State) and Jim Hendry (University of Portsmouth) to sample and map regional fault-related dolomites. On the family front, Ben continues to work for Cisco Systems in North Carolina. Lois and Kevin are officially emptynesters, as Emily has started her freshman year at MU.

Mike Underwood spent the 2009-2010 academic year on sabbatical leave. During September-October, he served as co-chief scientist for Expedition 322 of the Integrated Ocean Drilling Program, and the rest of the year was consumed with related duties.

Eric was recently funded by the Air Force Research Laboratory and the National Nuclear Security Agency to initiate detailed work on the seismic attenuation in the Tibetan plateau. Xiaofeng Liang, Xueyang Bao, and Eric will be working to create reliable models for both seismic velocity and attenuation to better predict seismic amplitudes across the plateau.

Mitch Schulte has continued his research studying the formation and transformation of organic compounds during water rock reactions. He also has continued to serve the scientific community by participating in panels for IODP (SSEP), NASA (the Mars Data Analysis Program) and NSF (RIDGE 2000). He has been chosen as a Thematic Working Group leader for the upcoming RIDGE 2000 Community Meeting in Portland, Ore., this October and co-convener and co-chair a special theme session in hydrothermal organic geochemistry at this year’s Goldschmidt Geochemistry Conference in Knoxville, Tenn. Mitch, as usual, taught Historical Geology last spring and is teaching Introduction to Geochemistry this fall. Graduate student Ariel Bennett is working to understand the role of simple biomolecules in the organic chemistry of hydrothermal systems and the origin of life. She has been awarded a NASA Earth and Space Science Fellowship, a very competitive and prestigious award.

results suggesting that our idea of how convergence between the Indian and Eurasian plates is much more complicated. Savas Ceylan’s and Xueyang Bao’s research findings on surface wave tomography and regional phase attenuation, respectively, have suggested that Tibetan lithosphere is more complicated than previously thought. In addition, Gleb Skobeltsyn is nearly finished with his work imaging eastern Turkey and the Caucasus region using surface waves and has begun work analyzing data from Iran. Yue Du is continuing work on the NETS data; she is developing software to calculate S-wave receiver functions. This fall Eric dismantled the PUNA seismic array, a process that took approximately two months. The PUNA was a 73-station broadband seismic array across the southern portion of the central Andean plateau. As a part of the project, the research group has begun to analyze surface wave dispersion; a new graduate student from Peru, Frank Calixto-Mori, has nearly finalized his work on analyzing Rayleigh wave propagation across the PUNA array. Eric was recently funded by the Air Force Research Laboratory and the National Nuclear Security Agency to initiate detailed work on the seismic attenuation in the Tibetan plateau. Xiaofeng Liang, Xueyang Bao, and Eric will be working to create reliable models for both seismic velocity and attenuation to better predict seismic amplitudes across the plateau.

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Alan Whittington spent a year on research leave, although he still co-taught Solar System Science in the fall semester with Angela Speck. Leave allowed him to enjoy field trips before and after the GSA meeting in Portland, Oregon, exploring the northern Cascades and the High Lava Plains. In December, Tony Bollasina completed his senior thesis on the rheology of crystallizing basaltic lavas. Alan spent two weeks in Guatemala in January with PhD student Geneviève Robert, sampling the active basaltic volcanoes Fuego and Pacaya. In March, Alan spent two weeks at the University of Oklahoma performing experiments on hydrous pegmatite melts, courtesy of a Big 12 Faculty Fellowship. In May, Alan gave talks at the EGU meeting in Vienna, and at universities in Munich, Potsdam, Goettingen and Hannover, where PhD student Geneviève Robert spent the summer doing experimental work. In the summer, Geoffroy Avard successfully defended his PhD dissertation. Geoffroy will start work as a professional volcanologist working for the Costa Rican government in fall 2010, after he spends a couple of months volunteering at the observatory on Montserrat. The lab stayed busy over the summer, with undergraduates Ashley Reinsch (geology and journalism) and Brandon Hester (physics) working on astromineralogy. Angela also took research leave and traveled a lot. Xander, 6, is in first grade and enjoying taekwondo, while Hamish, 3, continues to develop his own fighting style.
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<th>Active Research Grants</th>
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Sofie Gouwy joined our department as a postdoctoral scholar earlier this fall. She will be working with Ken MacLeod in the stable isotope laboratory, determining the oxygen isotope compositions of Ordovician and Devonian conodonts. She plans to document isotopic trends through time in several stratigraphic sections in order to assess climate history and constrain conodont paleobiology. Sofie is from Belgium, where she received MS and PhD degrees from the Katholieke Universiteit Leuven. Previous to her arrival at MU, she worked at the Royal Belgian Institute of Natural Sciences in Brussels before moving to Italy, where, for the past three years, she has worked on Middle Devonian conodont biostratigraphy of the northwest margin of Gondwana at the Universita di Modena e Reggio Emilia.

Alice Thompson is our administrative assistant. She balances a variety of tasks including field camp, graduate admissions, grants, etc.

Marsha Huckabey celebrated her 24th year in our department in September. As an administrative associate, she continues to excel at running the fiscal aspects of the department. She also works with our Geology Development Board in its many activities throughout the year.
Returning Postdoctoral Scholars

Xiaofeng Liang, left, and Yan Jing, right, joined our department last year. Xiaofeng received his PhD in 2009 from the Institute of Theoretical and Applied Geophysics at Peking University. He is working with Eric Sandvol on seismic tomography of the upper mantle beneath the Tibetan Plateau. Yan came to us from the Beijing China Earthquake Administration. She is studying foreshocks and aftershocks of earthquakes in northern China, with Mian Liu, to better understand the nature of earthquake sequences and potential hazards posed by them.

Lots of good food at the 2009 Thanksgiving feast in our department. Clockwise around the table: Nathan Rossman, Genevieve Robert, Brian Campbell, Joey Cochran and Rachel Duckworth enjoy food, while Marsha Huckabey and Lois Shelton welcome guests.
Haitian Coast Was Uplifted During Quake: MU researcher was part of team that examined the underwater extension of faults responsible for the Haiti earthquake

COLUMBIA, Mo. – Evidence of the Jan. 12 earthquake in Haiti remains. On land, buildings are destroyed and coral becomes stranded above sea level. In the sea, the water is murky from the displaced mud. A University of Missouri researcher and a graduate student were members of a team that went on a 20-day research cruise off the coast of Haiti after the earthquake. The information gathered during the trip will help officials rebuild Haiti.

The scientists wanted to understand which segments of the earthquake fault ruptured and how much fault movement and uplift of coastal features occurred in locations along or near the fault. Colleagues working at the same time on land discovered that some areas of the Haitian coast had been uplifted almost a foot and a half, while other areas had dropped.

The National Science Foundation (NSF) Rapid Response Research program funded the research team that used multibeam, sub-bottom profiler, and side scan sonar equipment to map the seafloor surrounding the Enriquillo-Plantain Garden Fault, a system of faults that runs along the southern side of the Dominican Republic and Haiti. Researchers produced sonar images of the seafloor and seismic profiles that revealed the 3-dimensional geological structures to about 50 meters below the seafloor. During the trip, researchers also gathered sediments and other evidence from the seafloor that might reveal hidden structures, how the Earth's plates have moved and where strain may be building now.

“The coast in this region had been uplifted, while other areas had dropped, which indicated that some faults had not yet been mapped,” said Milene Cormier, assistant professor of geological sciences at MU. “When mapping the underwater extension of the faults, we can determine where it hasn’t ruptured at the seafloor in the last earthquake. This could be used to forecast what might happen there next.”

Mapping the faults will help people make better decisions about rebuilding the capital city, Cormier said. The research team took a seafloor sonar survey of the area that is being considered for a new port and will determine if it could be a better location.

“The team working onshore was constantly communicating with our team surveying offshore,” Cormier said. “Understanding what happened both on land and underwater during the earthquake gives us a more complete picture of what may happen in the future. Scientists from many different universities around the world and from U.S. agencies have been collaborating constructively since the January 12 earthquake and are racing to understand what happened.”

The NSF-owned Research Vessel (R/V) Endeavor carried the researchers from MU, Columbia University, the University of Texas at Austin and the University of California at Santa Barbara.
National Research Council Ranks Doctoral Programs – Data Confirm the Increasingly High Quality of Our Program

In late September, the National Research Council (NRC) released ratings for doctoral programs in multiple academic fields. The new ranking procedure is complex and makes direct comparisons of individual programs difficult. However, it allows us to assess the relative quality of our program nationally.

Based on hard data, we have moved from being unranked in the 1995 NRC assessment to being ranked in about the upper third of 140 doctoral programs overall in the earth sciences in 2010.

In the category of Student Support (student financial support, degree completion and placement), we are ranked among the top 10 percent in the nation. This ranking reflects the hard work of our faculty as well as the support of our alumni and friends.

Our NRC ranking will be out there for many years, so it should help us in recruiting students and in communicating our program’s quality to others on campus and beyond.
Students, from left, Wai-Yee Leung (University of Florida and research intern at NASA Ames), Amanda Tazaz (Florida State University) and Jennifer Poole (MU) prepare to collect microbial mat samples and methane-rich bubbles from a hypersaline site in Laguna Figueroa, Baja California, Mexico. Jennifer completed her master's degree last year with Cheryl Kelley.

Peter Nabelek explains the occurrence of aplite dikes along the St. Francis River to our undergraduate students on a field trip with his Igneous and Metamorphic Petrology class.

Graduate student Amanda Smith, center, waits to see lead-zinc ores underground in the Sweetwater mine on a joint MU-Iowa State-Oklahoma State economic geology field trip led by Kevin Shelton in September 2010.
Doctoral student Genevieve Robert stands on Fuego volcano, Guatemala, with Agua volcano behind. Genevieve is studying the viscosity of hydrous arc basalts with Alan Whittington.

Bjorn Held, graduate student, and Joey Cochran, undergraduate, relax next to earthquake damage (shifted columns) at the Roman ruins of Jerash in Jordan. Bjorn is studying neotectonics for his master’s degree with Paco Gomez.

Students from Paco Gomez’s surficial geology class tour Tumbling Creek Cave (Protem, Mo.) on a field trip led by Tom Aley of the Ozark Underground Laboratory.
MU students Mike Danuser, Joey Cochran and James Christopher join Eric Sandvol surveying a fault scarp near Datong, China, while on the department’s study abroad program in summer 2010.

Graduate students Drew Thomas, lower left, and Justin Tiffany examine fold deformation in the southeast Wind River Range. Justin is completing a master’s degree with Bob Bauer on these rocks.

Doctoral student Genevieve Robert climbs Pacaya volcano, Guatemala. Is this her adviser following her?
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:

Mike Bahorich, Apache Corporation
Oil and gas industry trends

Kathleen Benison, Central Michigan University
Going to Mars? Or Western Australia? Don't drink the water!

Ariel Bennett, MU Geological Sciences
An experimental and theoretical study of biomolecules under Hadean hydrothermal conditions

James Conder, Southern Illinois University
Microseismicity and other acoustic signals of the central and northern Lau basin

David Fike, Washington University
SIMS insights into the sulfur cycle

Francisco 'Paco' Gomez, MU Geological Sciences
Faults, dikes, and Red Sea rifting: Insight from recent earthquakes in Saudi Arabia

Jeffrey Hanor, Louisiana State University
Sedimentary basins as chemical reactors

Harold Johnson III, MU Geological Sciences
Sonar surveys post January 12, 2010, earthquake event in Haiti's coastal waters

Jay Kaufman, University of Maryland
A glacial divide between Ediacaran extinction and the Cambrian explosion of life

Katherine Kelley, University of Rhode Island
(1NSF MARGINS Distinguished Lecturer)
The role of water in mantle melting and mass transfer processes at subduction zones

Mark Leatherman, MU Geological Sciences
Characterization of the Beowawe hydrothermal field, Great Basin, NV: A potential modern analog for epithermal Au-Ag deposits

James Ni, New Mexico State University
Slab geometry and mantle flow in the Rivera-Cocos subduction zone

William Seyfried, University of Minnesota (NSF Ridge2000 Distinguished Lecturer)
Magmatic and tectonic effects on the chemical evolution of hydrothermal vent fluids at mid-ocean ridges

Philip Skemer, Washington University
Microstructural and rheological evolution of the upper mantle: Geological and experimental perspectives

Gleb Skobeltsyn, MU Geological Sciences
Three dimensional S-wave velocity structure of the uppermost mantle in the Caucasus region and Eastern Anatolia

Richard Tosdal, University of British Columbia
(SEG Thayer-Lindsley Visiting Lecturer)
Tectonic transitions in the porphyry-epithermal environment

Michael Urban and Mark Cowell, MU Geography
Negotiating climate: Lessons from the global climate change conference in Copenhagen

Cheryl Waters-Tormery, Western Carolina University
Heterogeneous wrench-dominated transpression in the deep crust recorded by the Burnsville fault and related structures, Blue Ridge, North Carolina: Implications for the Acadian orogeny in the southern Appalachians

Charles Werner, Gamma Remote Sensing Research and Consulting AG
Imaging the movements of glaciers and landslides with ground-based radar systems

Alan Whittington, MU Geological Sciences
Active volcanism in Guatemala: A field perspective
Year of Transition at Camp Branson is Completed

Summer 2010 represented the last year in which Bob Bauer acted as director at Camp Branson. Bob has served in this position for the past eighteen years, during which Camp Branson has furthered its position as one of the most renowned and highly sought-after geology field camps in the United States. Camp Branson would not be what it is without Bob’s devoted work and attention for nearly two decades, and for that, we are very thankful. Our new director, Miriam Barquero-Molina, has pretty big shoes to fill.

During the past year Miriam had a chance to be involved in the multitude of administrative and management tasks that take place leading up to each summer’s field course at Camp Branson: marketing, faculty and staff hiring, student admissions, logistics, accounting, etc. Working with and learning from Bob Bauer was a pleasure for her, and she is now eager to take on the role of director by herself.

During our field course at Camp Branson this past summer, we managed to bring together a large and geographically diverse student population. Students came from 21 different schools. Twelve students came from schools in Missouri (University of Missouri, Northwest Missouri State University, Washington University, Saint Louis University, University of Central Missouri and Missouri State University). Twenty-nine students came from universities elsewhere in the United States: Whitman College (Wash.); University of Tennessee at Chattanooga; Muskingum College (Ohio); University of Nebraska-Omaha; SUNY Fredonia (N.Y.); Temple University (Penn.); Central Michigan University; Purdue University (Ind.); Wayne State University (Mich.); University of North Carolina-Chapel Hill; Marshall University (W.V.); Montclair State University (N.J.); Denison University (Ohio); University of Southern California; and University of Wisconsin-Milwaukee. We were pleased that 12 of our 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 (fieldcamp.missouri.edu), which Miriam updated last year to match the style of our department website. It is the main portal through which potential students learn about our camp.

Our projects in field camp are diverse and highlight a broad range of geological field experiences, including sedimentology, stratigraphy and sedimentary environments, geologic mapping of folded and faulted sedimentary rocks, structural analysis of metamorphic rocks, surface and groundwater hydrogeology, and reflection and refraction geophysics. We worked with a group of exceptional field instructors with expertise in all of the disciplines that the students are exposed to at Camp Branson. Damon Bassett, an instructor at Missouri State University and a paleontology and sedimentology expert, led all of our sedimentology and stratigraphy projects. Jon Mies, a structural geologist at the University of Tennessee at Chattanooga, worked with Miriam and Bob Bauer on the field-mapping projects on Dallas and Derby Domes. Mark Anders (Columbia University), Dennis Dahms (University of Northern Iowa) and Miriam accompanied the students on a four-day field trip to Yellowstone and the Grand Teton National Parks. Dennis Dahms also led our fluvial-terrace mapping project. Don Siegel, Laura Lautz, Ed Romanowicz, and Tim Daniluk (Syracuse University) oversaw all the surface and groundwater hydrology projects. And our own Eric Sandvol bravely took charge of all the geophysics projects.

Our advanced projects in hydrogeology and geophysics once again proved to be sought-after options amongst our student population during the sixth and final week of camp, when students have the freedom to choose their final project in the course. This summer we once again expanded the equipment capabilities of our advanced geophysics project, for which we used a total of 104 geophone channels composed of 2-16 channel Missouri GEODES and three 24 channel GEODES on loan from the Incorporated Research Institutions for Seismology (IRIS) Program for Array Seismic Studies of the Continental Lithosphere (PASSCAL) instrument center. As a member of IRIS, we were able to borrow the extra equipment for the duration of our project for only the cost of shipping. Our equipment allowed the students to run seismic lines nearly 500 meters long and record 84 shots (several of them with stacked data lines) in three days. A total of 200 Mbytes of high quality data allowed the students to image faults formed during Laramide folding events near the Derby Dome area. To successfully manage all the field equipment, Eric recruited the assistance of a motley crew of devoted helpers that included teaching assistants, other faculty and his own family members. But he took it in stride and pulled off one the most successful geo-
physics projects that Camp Branson has ever seen.

In addition to our faculty, we were once again lucky to be able to count on a strong supporting staff who allowed for camp instruction and camp facilities to run smoothly. Hal Johnson, working toward his doctoral degree at MU with Milene Cormier, served as a teaching assistant and all around satellite-internet and network guru, not an easy thing to do in such a remote location. Billy Alward, who completed a master's degree with Bob Bauer in the spring, worked the first three weeks of camp before departing for his impending job with Exxon Mobil in Houston. Drew Thomas, a Camp Branson graduate from the class of 2009 and MU master's student with Bob Bauer, combined his duties as teaching assistant and equipment czar with his own preliminary field work in the area. Angie Van Boening, a graduate of our department and instructor at University of Nebraska-Omaha, was with us for four weeks as a teaching assistant and manager of the logistics for the Yellowstone-Tetons field trip. Jill McKenzie, our cook, and Jessica McKenzie, our cook's helper, did a superb job of keeping us all fed and happy for six whole weeks. Suki and Warren Smaglik, our new year-round caretakers spent their first summer at Camp Branson, and what a summer it was. Extensive flooding of the Popo Agie River due to late snow falls and rapid melts in the Wind River Mountains caused severe damage to our camp. A swollen Popo Agie reached peak flood stage at 7.8 feet on June 6, the highest level recorded in 50 years. During the flood, the river, in one fell swoop, took out the suspension bridge that connected the island where the main part of camp is, to the south side of the canyon, where the Director's cabin is located. Extensive flooding damaged quite a few buildings down the canyon in Lander, and several days of sandbagging ensued, both in our camp and down in Lander. Thankfully, a forecasted second flood peak never materialized, and the enraged Popo Agie slowly returned to normal levels in the following weeks. But the damage to our camp was done, and now we will also add the construction of a footbridge to our intended roof repairs and cabin log restorations. Fortunately, the cost of replacement of our footbridge will be covered mostly by university insurance, so the plans for sprucing up our camp for the upcoming centennial celebration in 2011 proceed as intended.

Thanks to all of the faculty, staff, alumni and friends whose contributions continue to help Camp Branson move forward. This was the 100th consecutive year of the camp. Let's make it another 100!

Scholarship students include, from left: Logan Hill (MU), Jacob Spreitzer (Central Michigan), Jessica Lodewyk (Wash U), Andrew Beard (U of Tenn-Chattanooga), Elisabeth Wilson (Central Michigan), Andrew Robinson (Wayne State), Robyn Weyenberg (U of Tenn-Chattanooga), Kurt Knatiuk (Wayne State University), Jeff Veloso (Montclair State), Aaron Oschner (U of NE-Omaha), Claire Landis (U of Tenn-Chattanooga) and Casey Bulen (NW Missouri State).
Undergraduate Research Program

A few years ago we began a departmental Undergraduate Research Program. The program is funded from four Opportunities for Excellence in Geology Endowments (the John and Betty Marshall, Gene and Thelma Schmidt, Walter D. Keller, and Norman E. Smith funds). Last year we funded undergraduate projects of $3,000 each that led to senior theses.

The intent of the program is to provide funds to enable undergraduates to conduct meaningful field- and laboratory-based research as part of their MU education. There are a number of benefits to such a program:

1. It encourages and rewards research starting early in our students’ careers.
2. It is a great recruiting tool to attract students to our program.
3. Our students will be more competitive and better prepared for graduate school and the work force.
4. The program increases our department’s visibility on campus and beyond.
5. Integrating meaningful research into our undergraduate curriculum allows us to create a unique role relative to other state-funded universities in Missouri.

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

Tony Bollasina presents the results of his senior thesis at the Undergraduate Research Forum in the Bond Life Sciences Center. Tony’s research, “The effect of crystallization on the viscosity of volcanic basalts: Testing current models for magma viscosity,” was advised by Alan Whittington (left).
Undergraduate Degrees

Bachelor of Science
James Aiken
Anthony Bollasina
Evan Gentzler
Logan Hill

Honors in Geological Sciences
Logan Hill

Senior Thesis

Anthony Bollasina
The effect of crystallization on the viscosity of basalts: Testing current models for magma viscosity
Advisor: Alan Whittington

Logan Hill
Ore petrology of gold and base-metal mineralization in the north end of the Yellowknife greenstone belt, NWT, Canada
Advisor: Kevin Shelton

Scholarships

Edmond & Mary Raymond Scholar
William Cochran

Pearl T. Sando Scholars
William Cochran
June Skamenca

Gene Schmidt Scholar
Randall Bonnell

Fred Strothmann Scholars
Virginia Barnes
Randall Bonnell
William Cochran
Michael Danuser
Jase Ely
Nathan Hopkins
Cody Jaeger
Joseph Kessinger
Martin Krueger
Ashley Reinsch
Emma Rosenow
Timothy Robertson

Field Course Scholars
James E. Beard
Casey L. Bulen
Bart T. Cubrich
Logan Hill
Kurt A. Knatiuk
Claire E. Landis
Jessica A. Lodewyk
Aaron T. Oschsner
Andrew F. Robinson
Nathan J. Schmitz
Jacob D. Spreitzer
Jefferson N. Veloso
Robyn M. Weyenberg
Elizabeth G. Wilson

Newfield Exploration Scholar
Martin Krueger
Graduate Degrees

Master of Science

William Alward
 Structural analysis of basin-margin Laramide folding and fault reactivation in the south-central Wind River Basin
 Advisor: Robert Bauer

Gina Applebee
 Dike emplacement and interaction along the East Pacific Rise
 Advisor: Milene Cormier

Michael Hillix
 Analysis of microfabrics in the Nankai Trough accretory prism, Japan
 Advisor: Mike Underwood

Jennifer Poole
 Substrates used by methanogens in hypersaline environments
 Advisor: Cheryl Kelley

Danielle Robinson
 Seismic anisotropy beneath the Southern Puna Plateau
 Advisor: Eric Sandvol

Nathan Rossman
 Entrainment and transport of coarse stream bed material in a fluviokarst watershed, south-central Missouri: A tracer particle study
 Advisor: Francisco “Paco” Gomez

Doctor of Philosophy

Geoffroy Avard
 Rheology of dacite volcanoes: From magma chamber to eruptive style
 Advisor: Alan Whittington

Scholarships

Davies Memorial Scholar
 Jonathan Bennett

Ethington Geology Scholar
 Rachel Barker

Freeman Geology Scholar
 Harold E. Johnson III

Graduate School Fellows
 Martin B. Gross
 Page Quinton
 Andrew Thomas

Himmelberg Geology Scholar
 Jesse Merriman

Johns Geology Scholar
 Junhua Guo

Hal & Ruth Johnson Scholar
 Savas Ceylan

Walter D. Keller Scholars
 Frank Calixto-Mory
 Harold E. Johnson III

Craig Russell Knotts Scholar
 Zachary Wenz

Knox Geology Scholar
 Rachel Barker

Miles Geology Scholar
 Jonathan Bennett

GSSF Scholars
 Christopher Burrows
 Amanda D. Smith

Peck Graduate Scholars
 Jonathan Bennett
 Christopher Burrows
 Junhua Guo
 Feng Lin
Peck Graduate Scholars (cont’d)
Jesse Merriman
Amanda D. Smith
Justin Tiffany
Yijang Ye

Rexroad Geology Scholar
Shannon Haynes

James H. Stitt Geology Scholar
Shannon Haynes

Fred H. Strothmann Scholars
Rachel Barker
Michael Pelch

M. Ray Thomasson Scholar
Savas Ceylan

Tlapek Geology Scholars
Mark Grzovic
Bjorn Held
Shayanne Romine

Viele Geology Scholars
Brian Campbell
Justin Tiffany

Student Grants and Awards

NASA Earth and Space Sciences Fellowship
Ariel Bennett

National Sciences and Engineering Research Council of Canada Postgraduate Scholarship
Genevieve Robert

Society of Economic Geologists Foundation - Graduate Fellowship
Logan Hill

MU Huggins Graduate Fellowships
Genevieve Robert
Frank Calixto-Mory

James H. Stitt Graduate Teaching Award
William Alward

Geology Development Board Outstanding Undergraduate Awards
Joey Cochran
Logan Hill

Estwing Hammer Award
Logan Hill

Billy Alward receives the 2009-10 James H. Stitt Graduate Teaching Award from Director of Graduate Studies Bob Bauer.
Logan Hill receives the Estwing Hammer from Director of Undergraduate Studies Miriam Barquero-Molina. This award honors the top undergraduate student to attend field camp.

Joey Cochran accepts the 2009-10 Geology Development Board Outstanding Undergraduate Award from board chair Gary Mitchell.

Logan Hill receives a 2009-10 Geology Development Board Outstanding Undergraduate Award from board chair Gary Mitchell.


**Student Publications and Abstracts**


**Jiménez Berrocoso, Á., MacLeod, K.G., Martin, E.E., Bourbon, E., Bassak, C., and Isaza Londoño, C.,** in press. A dynamic nutrient trap model for Cenomanian (Late Cretaceous) black shale deposition in the western tropical North Atlantic?: Geology.


Putman, K.E., MacLeod, K.G., and Ethington, R.E., 2010. Evidence for cooling across the Dubuque/Maquoketa contact (Upper Ordovician) using conodont paleothermometry: GSA Abstracts with Programs (north central).


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.

Snow covers Camp Lander (now Camp Branson) on June 14, 1945. Photo taken by Betsy Page McRae (MU '48).

Jefferson Club Members

Ambassadors
Mrs. Norman F. Jeffries
Mr. and Mrs. Robert Weiser

Diplomat
Mr. John H. Marshall Jr.

Very Distinguished Fellows
Drs. Alice M. and John F. Blount
Dr. and Mrs. Tom Freeman Jr.
Dr. and Mrs. Herman Ponder
Mr. and Mrs. Ed Williamson
Mrs. John W. Tlapek

Distinguished Fellows
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Mr. Donald S. Garvin
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Mr. Scott H. Raymond
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Fellows
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Mr. and Mrs. Stephen T. Phillips
Mr. and Mrs. Gene W. Schmidt
Mr. and Mrs. Robert K. Sylvester
Dr. M. Ray Thomasson and Ms. Merrill Shields
Mr. Tom Ware
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(through Aug. 31, 2010)

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Neil Babb
Dewey A. Baker
Merrilee N. Barta
Deborah Bergfeld
Laimonis Bergmanis
Michael J. Bernthal
Stephen Biddick
Shane R. Bird
Richard S. Bishop
John and Alice Blount
Erma T. Brown
Wayne F. Canis
Mary G. Cappadona
Randel T. Cox
Rev. J. Torrey Curtis
William E. Daughdrill
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Dennis B. Duewel
Christine A. Dyess
Everard P. Ellisor
Robert L. Foster
Thomas J. Freeman Jr.
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Richard J. Gentile
Martha George
Edward A. Goodrich
Robert Goodrich
Dana Downs Heimes
William M. Hoag
Richard D. Hoare
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Bruce E. Hunter
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Arthur Kasey
Amy C. King
Larry M. Knox
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Stuart A. Maier
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Jim P. Miller
John C. Miller
Gary C. Mitchell
Charles J. Montague
George E. Moore Jr.
Timothy B. Murphy
William J. Neal
Allison D. Nicholls
Dennis R. Ojakangas
Richard W. Ojakangas
Hank Ott
G. Lynn Parman
David M. Patrick
Katharine Pecsok
Jack J. Pennington
Stephen T. Phillips
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David W. Rapp
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Kary N. Werner
Maribel C. Westcott
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- William Burrows Allen Field Camp Scholarship
- Mr. & Mrs. Richard G. Boyd Endowment Fund
- John F. Burst Graduate Fellowship in Industrial Minerals
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- Raymond Ethington Geology Student Scholarship Fund
- Tom Freeman Geology Student Scholarship Fund
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- George W. Viele Memorial Geology Field Camp Scholarship Fund

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- Geology Endowment Fund
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- 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
- John M. Ware Memorial Geology Endowment
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R.E. Peck Professorship
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MU Geological Sciences Study Abroad in China participants visit Tangshan, site of the deadly 1976 magnitude 7.8 earthquake. Our summer 2010 program, “China: Geology, Geo-hazards, and Society,” was a great success. Student participant costs were subsidized in part by alumni scholarship funds.
MU’s Camp Branson Geology Field Laboratory 1911-2011
Celebrating 100 Years of Excellence

The Legacy of Camp Branson

The University of Missouri’s Geology Field Laboratory near Lander, Wyoming, was established by Prof. Edwin B. Branson in the summer of 1911. It is the longest continually active geology field camp in the United States. Camp Branson has a tradition of commitment to excellent training of students in the geological sciences. Our students’ lives have been shaped by caring faculty mentors in the classroom and in the field.

Assist the Next Generation of Geologists

To continue this legacy, we ask you to share in establishing two funds for the care and improvement of Camp Branson. The Camp Branson Improvement Fund is an immediate-use fund that will enable us to perform needed improvements and repairs to the physical structures at camp. These include restoration of log structures, re-roofing of cabins, and replacement of field vehicles used to transport students to field sites. The Camp Branson Endowment is a permanently endowed fund whose earned income will provide for student instruction at the MU geology field camp. The use of the funds can include scholarship awards, stipends, travel expenses, faculty support, supplies, instructional materials and field-based equipment. These two funds will ensure that future students will continue to receive the same excellent field training that so many of you received.

Attract the Finest Students

Camp Branson is in great shape in terms of student enrollment. The camp serves as the capstone experience for our BS majors in Geological Sciences. It also attracts outstanding students from schools across the nation. MU recently allowed us to charge the same tuition for Missouri resident and non-resident students at Camp Branson, helping us to continue to attract the finest students. Our scholarship funds are currently sufficient to provide scholarship support to field camp students who carry a grade point average of at least 3.0. These students come to Camp Branson for excellent instruction in a curriculum that includes a broad diversity of field experiences. However, in order to continue to provide our high quality of education, we need your help.

Ensure the Future of Camp Branson

We have a great faculty and excellent students at our superb facility in Wyoming. We soon will have secured renewal of a thirty-year lease for Camp Branson from the U.S. Forest Service. However, a key piece to ensuring the future of Camp Branson is still needed. The last substantial physical renovation of Camp Branson was more than 25 years ago and many of our cabins and other buildings are in need of renovation and repair. We anticipate that a total of approximately $500,000 is required over the next couple of years to accomplish these renovations and to replace aging field vehicles. We hope that alumni and friends can help us in preserving Camp Branson as the premier geology field camp in the nation for future students.

Celebrate the Centennial of Camp Branson

The summer of 2011 marks the centennial of the first session of the Camp Branson Geology Field Laboratory in 1911. In the coming months we will unveil plans for the Camp Branson centennial celebration, including an alumni reunion at camp in the summer of 2011. We hope that many of you will be able to join us. In the meantime, you can see and learn more about our exciting program at today’s Camp Branson by visiting fieldcamp.missouri.edu

How You Can Help

Alumni and friends of the Department are uniquely positioned to help an already strong program. We hope that you will take this opportunity to “give back” to a special place that has been so influential on the professional lives of many of you. Please join in strengthening the future of the Department’s field camp through a gift to the Camp Branson Improvement Fund and/or the Camp Branson Endowment.
Field camp students measure paleocurrents in the Nugget Sandstone during summer 2010.

The foot bridge at Camp Branson was swept away by flooding of the Popo Agie this past summer.

Gifts of all amounts will help make a difference in the lives of our students.

Donors of $1,000 or more will be recognized as Friends of Camp Branson on a permanent plaque in the camp’s dining hall. Donors of $5,000 or more will be highlighted as Distinguished Fellows of Camp Branson.

A gift of $12,000 will allow us to put a new roof on a cabin.

A gift of $30,000 or more will allow donors to adopt a cabin at Camp Branson, or to sponsor the Yellowstone trip through purchase of a new van used to transport students to field sites.

Thank you for helping Camp Branson!
Camp Branson Reunion: July 16-17, 2011

On July 16-17, 2011, we are having a reunion in Wyoming to celebrate the 100th anniversary of the first field camp session at Camp Branson. Recently we activated a Web page for the reunion at fieldcamp.missouri.edu/bransoncentennial. The page is also linked to our department home page (geology.missouri.edu) and to the field camp Web page (fieldcamp.missouri.edu).

The reunion website contains lots of information about the celebration. Highlights of the reunion will include field trips to classic teaching sites (e.g. Derby and Dallas Domes) and a Centennial Banquet on Saturday, July 16. We will charge a small fee to help defray the cost of a packed lunch and the Saturday evening banquet (Adults: $20; Children, 12 and under: $10; collected on-site). Most important there is a “Yes, I’ll Be There” button that connects to a form that will let us know the number of people for whom we need to plan.

The website also contains links to information about lodging, camping and other activities in the Lander, Wyoming area. Camp Branson reunion participants are responsible for making their own lodging/camping reservations in the Lander area, so if you plan to attend, please book your lodging early.

We encourage you to visit the website and if you plan to attend, please let us know. We look forward to seeing you back at camp for what will be an exciting event.
Geology Development Board
Membership, 2010

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Consulting geologist
Highlands Ranch, Colo.

David J. Steyaert, Vice Chair
Impact Energy Resources
Denver

Savas Ceylan
University of Missouri

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

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Gene Schmidt
Consulting geologist
Tulsa, Okla.

Cheryl Seeger
Department of Natural Resources
Rolla, Mo.

Ed Williamson
BP Amoco (retired)
Houston
From our Geology Development Board Chair …

I am honored to be the new chair of the Geology Development Board and hope to continue the success of previous board members.

July 16 and 17, 2011, is the time for our 100th Anniversary Reunion at Camp Branson. This is a big deal for our department and the Geology Development Board. We hope to draw people from all around the country to the event. I was fortunate to have been at the reunion in 1997, and it was a blast. Please save these dates for the reunion celebrating the 100th anniversary of Camp Branson.

The Development Board is continuing the effort to raise funds for Camp Branson. Camp Branson needs renovations so that we can start the next 100 years much stronger than we started out the first 100 years. Please consider donating to this worthwhile endeavor.

Tha mi an dochus gu bhiel chi mi sibh, a h-uile duine, a dh’aithghearr. Tapadh leibh gle mhor! I hope that I will see you, everyone, soon. Thank you very much!

(I must throw in a wee bit of Scottish Gaelic, just to keep me up on it.)

Kindest regards to everyone,

Gary C. Mitchell

Chair
E-mail: jngmitchell@earthlink.net

Newly elected Geology Development Board chair Gary Mitchell receives a plaque recognizing his two years of service as board vice-chair from department chair Kevin Shelton.
Alumni News

Kathleen Abel (MA ’78) resides in St. Paul, Minn.

Doug Babcock (FC ’78, BA ’78) writes, “I am trucking on ‘half days’ now and cowboying and gentleman ranching the rest of the time. Still hitched to the same gal I married after field camp in 1978, but all three sons have left the nest. Best wishes to all.”

Clifford A. Balster (Grad Student ’50–’51) writes, “Believe it or not I can remember well teaching beginning geology. I even remember Don Biggs. Dr. Keller was one of our favorites.”

Bill Berthold (FC ’84, BS ’85) writes, “Some day Rita and I will make bologna sandwiches and PB&J’s at Branson for field geologists of the future. Branson will always be relevant!”

Shane Bird (FC ’79, BS ’77) writes, “Best wishes to Ray and Tom. Hope all is well at MU. Looking at retiring in two to three years possibly and may return to Columbia.”

William C. Bridges (FC ’55, BA ’56, MA ’58) reports that all is well in Dallas, Texas where he resides.

Wayne F. Canis (MA ’63, PhD ’67) resides in Florence, Alabama.

Cindy Carroll (MA ’83) is an energy specialist with the Missouri Department of Natural Resources in Jefferson City, Missouri.

Kenneth Chapman (FC ’82, MS ’84) writes, “Hi all. Last year’s project was a new deck. This year I’m remodeling the kitchen. OMG! All is well here except the employment prospects. I’m just glad to be employed at this point. My goal is to get back into geology or environmental work at some point. Moving is not an option for a couple of years. Always open to suggestions from those who have leads. Take care everyone.”

John R. Crocker (FC ’50, BA ’50) writes, “After selling my chemical raw materials distribution and sales company, I have devoted much of my time exploring the world from the South Pole to Vietnam to Italy and South Africa. I am amazed at how much of the MU Geology information I retained.”

Tony Daus (FC ’80, BS ’81) reports that he is still working on water resources and water quality issues around the West. My daughter finished her Mizzou journalism degree in May. I hope to see many at Camp Branson for the anniversary get-together.”

George H. Davis (FC ’86, MS ’89) reports that over the past year he attended the AIPG national meeting, the North-Central/South Central GSA joint meeting and his 18th consecutive Association of Missouri Geologist’s meeting in October. He writes, “In 2011 we begin the sesquicentennial of the Civil War. Expect a paper or two on Civil War geology. Doing well; busy and happy.”

Robert Diem (FC ’51, BA ’52, MA ’53) resides in Bella Vista, Arizona.

Dennis Duewel (FC ’53, BA ’55, MA ’57) is still enjoying southern Oregon. He writes that he is close enough to Nevada to visit friends in Elko and kids in Reno. Dennis keeps up with MU Tiger football and basketball news through the Columbia Tribune website. He writes, “I watched the Tigers beat Nevada in Reno last September.”

Doug Elley (FC ’67, BS ’68) reports that since retirement he has been busy taking care of 20 years of deferred maintenance issues, and he has recently opened a new art gallery in Boonville, Missouri.

Evard P. Ellison (FC ’46, BA ’48, MA ’49) resides in Houston, Texas.

James H. Evans (FC ’56, BA ’59) writes that he always enjoys seeing the department happenings and the international cooperation.

Jerry Eyer (FC ’59, BA ’60, MA ’61) writes, “I am still busy! Consulting, trying to keep people out of bad deals, giving geology seminars at the local college and working with kids at Biltmore Estate.”

Stanley Fagerlin (PhD ’80) writes, “I spent four weeks in New Zealand and Australia in July and August. It was a spectacular trip. Hope to see many old friends at the Camp Branson Centennial Celebration next summer.”

Daniel Ferber (MA ’79) writes, “We are now grandparents. Kamryu was born November 30,
2009 so we are now spending time in Las Vegas with Kate and her husband. I am busy with my practice, gardening and renovating our house."

Ted Flanigan (FC ’77, BS ’78) sends greetings from Bandera, Texas.

Lee Florea (MS ’98) writes, "I just finished the second year of my appointment at Western Kentucky University. My first graduate student has completed his master’s thesis. I am making preparations for new isotope geochemistry projects in Kentucky."

Robert L. Foster (MA ’62, PhD ’66) reports that he continues to prospect for gold in central Nevada, mainly in Lander County.

James R. Frank (FC ’75, BS ’76, MA ’79) writes, "I’m checking back in after missing last year. Still working for Chevron in my 32nd year now and based in Houston. Hi to all from the late ’70s. Hope to see you at the field camp reunion."

Alice Cooper Fuerst (MA ’80) reports that she continues to teach Geology 101 on a part-time basis at a community college in Kansas City, hoping the students will learn more about their surroundings.

Richard J. Gentile (FC ’56, BA ’56, MA ’58) writes, "I am keeping busy giving tours to the UMKC Geosciences Museum and working with a graduate student on his field thesis project. I spent one week in the Badlands, South Dakota with a class collecting Eocene vertebrate fossils for our museum collection."

David J. Goldman (FC ’61, MA ’63) writes, "Moved to North Carolina at the end of March. Awaiting settlement of our new home in Huntersville, just north of Charlotte. Enjoy the relaxed tempo here, compared to the Washington, D.C. tempo."

Barry Goldstein (MA ’77) reports that he is very happy in Australia. Barry writes, "I get to the United States at least two times a year. I’m now on the Geothermal Resource Council Board. Unconventional gas (especially underground coal gasification, shale gas and coal seam gas) is the growth petroleum play. Best wishes to all."

Richard Hamilton (FC ’53, MA ’55) writes that he is now retired from teaching high school science and serving six years as a division head. He writes, "My wife and I remain active in our church and I continue my interest in researching American circus history. I remain active on our town’s board of health."

Stanley Harris (Visiting Faculty ’49) reports that it was a great teaching-learning experience when he served as a visiting faculty member in the department. Stan writes, "It was important to me as I developed the geology program at SIU Geography-Geology Department. Ozark field trips helped me as I introduced ex-GIs to geology."

Lynne Hazelip (FC ’81, BS ’81) writes, "I’m still at Geotechnology Inc., but I’m spending more of the winter in the Keys. It’s too cold to work in February!"

Larry Heflin (FC ’59, BA ’59, MA ’61) writes that he is working with tunnels in New York and Washington, D.C. Larry likes to ski in the winter and sail the Chesapeake in the summer.

Troy L. Holcombe (FC ’62, MA ’64) writes, "I’m retired every morning and go to work every afternoon. I’m doing work on a project on the Gulf of Mexico bathymetry and marine geology. Travel plans include visiting grandkids in Hawaii."

F.D. Holland Jr. (MA ’50) writes, "I’ve been finishing up a paper for submission on shark teeth of the Upper Cretaceous Fox Hills Formation in North Dakota with two of my former doctoral students (they did most of the work)."

William C. Hood (FC ’58, BA ’59) reports that he and Sandy are still actively creating interactive displays for national park visitor centers. Currently they are working on one for Dinosaur National Monument.

Edith Roper Horrell (FC ’78, MA ’79) writes, "I am working part time as a substitute teacher, but that may change now that we sent our youngest child off to college this year. Our older son graduated in May and will be teaching in Lima, Peru. Our younger son declared geology as his major and attended Mizzou’s field camp this summer. It was fun to see the camp again and reminisce with Bill Mills and Jerry Yunker when he returned in July."

Art Kasey (Graduate Student ’65-’70) writes, "I’m back! Yes, I am still teaching geology and earth geoscience courses to teens at Fox High School. I still
love the challenge as I start my 40th year this fall. Major drop in state funding has hurt our district, but so far no layoffs of staff. Hopefully by the fall of 2011, Fox and Mizzou will be fully funded.”

Robert Kick (BS ’78) writes, “Forrester Group was bought by Foth in May 2009. The new company is very good. The family is well. Laura, 20, is starting her third year of college at Northwestern. Daniel, 17, finished his Eagle badge and is looking forward to college in one year. Beth is fine.”

David T. King Jr. (PhD ’80) writes, “We continue to work on impact craters and their internal and ejecta stratigraphy, especially at Wetumpka crater, Alabama. This is the end of my 30th year teaching at Auburn. I have a new administrative duty as director of the Concepts of Science program in our college.”

Romaine Kupfer (FC ’48, MA ’49) resides in Powell, Wyoming.

Brice Lambert (MA ’74) reports that for 25 years he and Lois have owned and operated The Ekalaka Eagle, a weekly newspaper in his hometown. Bruce writes, “The career change occurred after seven years as a geologist with Meridian Minerals in Billings, Montana. We are the newspaper’s third owners in 102 years. One employee and I work in the downtown office. Lois functions from home using voice recognition software. Diagnosed with MS in 1988, she is a quadriplegic but a very productive one. Our daughter, her husband and infant son live in Ekalaka where she is a nurse. Our son is in graduate school in Kirksville, Missouri, headed for its medical school. The work and lifestyle here agree with us. If you can’t have everything in life, Ekalaka is a good place to do without it.”

David Leach (MA ’71, PhD ’73) reports that he spent 2009 as the Gladden Fellow at the University of Western Australia, returned to Denver in December and retired from the USGS in January after 32 years. David writes, “Presently, scientist emeritus at the USGS, adjunct professor at UWA and China University of Geosciences, and part-time consultant.”

Fred Lohrengel (MA ’64) writes, “All is well. I will be teaching full time again this year. I still enjoy doing what I have done for the last 42 years. Dr. Keller becomes more understandable with each passing year.”

Earle McBride (FC ’54, MA ’56) reports that he spends his time on geology, genealogy and chores. He writes, “One of my former students completed her master’s thesis in the Flathead Sandstone, which intrigued me from field camp in 1954.”

Patrick McClung (BS ’94) writes that he is selling a ton of Carhartt’s at dungarees.net and keeping students happy at Quinton’s, Tonic, The Patio and Déjà Vu in Columbia.

Kenneth McGee (FC ’70, BS ’70, MA ’73) writes, “I am still a scientist emeritus with the USGS at the Cascades Volcano Observatory after retiring from the USGS nearly three years ago. I am currently working on the family history and genealogy and traveling quite a bit. I am also working on some writing projects.”

Jeff McManus (MA ’70) reports that he is still fixing computers and people. He writes, “What that has to do with geology I will never know. Hi to everyone.”

Arthur B. Merkle (PhD ’67) is still living in Destin, Florida where he teaches earth science and natural disasters at Northwest Florida State College.

John Miller (FC ’65, MA ’68) writes “I taught Geology for Travelers for the second time at the University of South Florida Learning in Retirement Program. I am enjoying the new travel trailer. Had a Peace Corps reunion in Montana and a trip to Hyder, Alaska, to see grizzlies/black bears feeding on salmon.”

Mark Milward (FC ’77, BS ’78) reports that he recently served as construction quality assurance engineer on a landfill project in Barbados. He writes, “Tough gig!”

Joseph G. Minke (PhD ’69) writes, “Still working with groundwater and natural resources in Park County, Colorado. Reporting on daily precipitation and weather for community collaborative rain and hail study. Life in Lee County, Florida from October through May and reside in Park County, Colorado from June through September.”

George E. Moore Jr. (FC ’35, MA ’36, MS ’38) writes that he and Wilma have been married for 70 years. They reside in Wakefield, Rhode Island.
Thomas R. Moore (MA ’81) writes, “Marcellus Shale is consuming my (and others’) life (lives). Being from western Pennsylvania makes it even more fun for me. At this writing I am about to spend a week in Newfoundland with John Taylor. Guaranteed it will rain all week. Muffie is doing parent care, and the kids are in California and Arkansas doing fine.”

William J. Neal (MA ’64, PhD ’68) writes, “I enjoyed seeing Ray Ethington at the regional GSA meeting in Branson. I visited Columbia and the campus for the first time in 42+ years. My wife and I enjoyed seeing the old (e.g., University Heights) and the new. It was good to see the karst area is now a state park. Watch for our beach book in spring 2011 (University of California Press).”

Dennis Ojakangas (FC ’57, MA ’59) is enjoying travel, cruises, family, gardening, church and reading. He writes that he doesn’t have time to do it all!

Richard Ojakangas (FC ’55, MA ’60) writes that he is retired, but busy! He writes, “I have research projects in Russia, India, etc.”

Patrick Perfetta (FC ’97, MS ’98) writes, “After five years in Anchorage, Alaska, we’ve made our way back to Houston, Texas, which is, needless to say, a bit different.”

Richard B. Powers (MA ’52) resides in Evergreen, Colorado.

Mike Quearry (FC ’73, BS ’73, MA ’75) writes, “Life is good. We are blessed richly! Hope to see you at the Camp Branson reunion summer 2011.”

Scott Raymond (FC ’71, BS ’72, MA ’74) writes, “This has been a really down year on a lot of levels. The economy, environment, politics, law, religion and institutions, to name a few. However, American spirit and ingenuity are buoyant. As such, what goes down must come up. I hope that the rebound is already under way by the time you are reading this, and that you are benefiting from it.”

By Reed (MA ’68) writes, “Failed retirement. After building ‘country estate,’ I went back to work traveling the world doing consulting work.”

Geoffrey Rigsby (FC ’05, BS ’05) works as a geologist with Vibra-Tech Engineers in Florissant, Missouri.

Jennifer Rilling Kuene (FC ’00) writes, “My husband and I bought our first home in late 2009. It’s an old craftsman in Seattle, and fixing it up should keep us busy for years to come!”

Thomas D. Rush (BA ’48, MA ’50) resides in Houston, Texas.

Jo Schaper (FC ’01, BA ’02) writes, “I am a freelance writer and assistant editor for the River Hills Traveler with a regular column called ‘Rock Talk’. I am a member of the Association of Missouri Geologists. I received the Lester Dill Award for contributions to speleology fall, 2009.”

Lisa L’Hote Schildt (FC ’73, BS ’80) writes that she is alive and well in Redmond, Washington.

Richard J. Schmitz (MA ’66) writes, “I am staying with my grandchildren until their working parents arrive home these days.” Richard resides in Englewood, Colorado.

Eugene (Buddy) Schweig (FC ’74, BS ’75) reports that he has one child left in college. He and Lisa reside in Denver, and say that they are loving it!

Jesse O. Snowden (FC ’61, MA ’61, PhD ’66) writes, “I’m still enjoying retirement! We moved to Denison, Texas, this year and bought a restored 1890 Victorian house, which Lucretia and I are having lots of fun furnishing and redecorating.”

Burt Thomas (FC ’00, BS ’01) writes, “I’m loving the survey and the Silicon Valley weather! My son, Farris, turned 1 as of Sept. 21, and he’s hoping his parents can figure out a way to extend their post-doc jobs long enough to ski in the Sierras one more time.”

Robert ‘Bud’ Weiser (FC ’57, BA ’58, MA ’60) writes that he is enjoying retirement on Lake Norman in North Carolina. Bud writes, “I enjoy reading about the activities of ones I knew around 1954–1960 as well as the happenings of the geology department.”
James H. Williams (FC ’50, BA ’51, MA ’52) is currently working on two publications for which he is co-author of *Quaternary in Missouri* and author of *Review of Engineering Geology in Missouri*. He is also president of the Missouri section of the American Institute of Professional Geologists.

Ed Williamson (MA ’73) writes, “We’re still living in retirement in Katy, Texas, and I’m trying to remember how I used to find time to go to the office every day. The economy might be recovering a little bit in the west Houston area. Or maybe not.”

In Memoriam

Walter G. Staley, Jr., 77, of Mexico, Mo., passed away on Oct. 10, 2010. Wally (as he was known to friends) was a three-time Olympian on the U.S. Equestrian Team. He rode with the team in the 1952 Olympics held in Helsinki, Finland, where the American squad won the bronze medal in the Three Day Event. He won an individual gold medal in the 1955 Pan American Games. Wally graduated from the University of Missouri with a bachelor's degree in geology. He continued his education with a bachelor's degree in geological engineering and a master's degree in geology from Washington University in St. Louis. Finally, he received a doctorate in solid-state science from Penn State University. He returned to Mexico in 1968 with his family, where he was employed at the A.P. Green Company until his retirement in 1992. Wally was a devoted friend of our department and a valued long-time member of our Geology Development Board.

New field camp director Miriam Barquero-Molina teaches a student about sedimentology of Tertiary alluvial fan deposits on Beaver Rim near Camp Branson. For 100 years, MU’s field camp has provided first-class field training for geologists. Miriam is committed to continuing that tradition.

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Field Camp Reunion website:
fieldcamp.missouri.edu/bransoncentennial