

# Department of Geology

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN  
*School of Earth, Society, and Environment*

## An Extraordinary String of Awards for Grad Students and Faculty!

**W**hat is the connection between Alaskan volcanoes, the River Waal in Holland, and a catchment basin in a remote French Alsatian village? The answer—four Geology doctoral students are conducting groundbreaking research in these far-flung locations, thanks in part to prestigious National Science Foundation (NSF) graduate fellowships and other prestigious awards.

Within the past three years, Nicole Fernandez-Franzen, Julia Cisneros, Robby Goldman, and Jack Albright have been selected among thousands of applicants for the NSF's Graduate Research Fellowship Program (GRFP). GRFP fellows receive full stipends for a three-year period, paving the way for travel, data collection, and collaborative research opportunities.

Nicole Fernandez-Franzen received her NSF fellowship in Fall 2016. Her research examines the role of chemical weathering in the production and transport of solutes from the continents to the oceans. Nicole, advised by Prof. Jenny Druhan, has spent the past year at the Institut de Physique du Globe de Paris (IPGP), conducting research with their collaborator and renowned chemical weathering expert, Prof. Jérôme Gaillardet.

"The NSF award gives me so much flexibility and independence, and it has been great to deepen the collaboration between Prof. Druhan's lab at Illinois and IPGP. Prof. Gaillardet's group has so much field experience and knowledge of global weathering, and their unique global data sets are allowing us to test and apply our models to what we observe in the real world," said Fernandez-Franzen.

"Nicole's NSF Fellowship has opened the door to new opportunities, including her collaboration with IPGP and a Chateaubriand Fellowship. She has been



The department's four NSF Graduate Research Fellowship recipients. From left: Robby Goldman, Julia Cisneros, Jack Albright, and Nicole Fernandez-Franzen.

able to develop unique and transformative new datasets indicating the extent to which isotopic signatures of minerals are reset by fluids. I am delighted to see her flourish as she pursues exciting new developments," said Prof. Druhan.

Julia Cisneros was awarded her NSF fellowship in Fall 2017, for her research concerning "Dune morphology and dynamics in fluvial channels." Dunes are a key element in controlling river dynamics across many scales, and her doctoral research with Prof. Jim Best aims to investigate dune formation and dynamics in fine-grained sediments, and the nature of dune response to changing flow conditions.

Cisneros has also been awarded an NSF Graduate Research Opportunities Worldwide (GROW) grant, which allowed her to spend Summer 2018 at Delft University of Technology, and the nearby research institute Deltares. Together, Cisneros and her Dutch colleagues will investigate the effects of bedform-flow hysteresis in the River Waal, Holland.

"This fellowship has given me the opportunity to really focus on my research, and build my career as a scientist. Specifically, I have learned how to write research

proposals with international colleagues and how to create a research plan that benefits both my research and the current research taking place in the River Waal," said Cisneros.

"Julia's GRFP and GROW grants have enabled her to reach out across the globe to study some of the world's biggest rivers, and rivers with some of the most pressing issues of anthropogenic change. This funding has also allowed her to interact with leading international groups, access unique datasets and make links that will be of immense benefit to her current research and future career aspirations," said Prof. Best.

Robby Goldman joined Prof. Trish Gregg's lab in January of 2017, after a Fulbright Fellowship in New Zealand, where he investigated the Akoroa Volcano. His work examines how the stress state in volcanic host rock affects magma propagation during an eruption. Through NSF, Robby has applied for Graduate Research Internship Program (GRIP) funding to visit the Hawaiian Volcano Observatory in summer 2019. There, he can collaborate with other volcanologists to study Kilauea.

"The trip to Hawaii will help me develop models of magma migration through Kilauea's summit and flanks, to improve eruption forecasts and hazard assessments. This is an especially meaningful opportunity for me since I am part Native Hawaiian and have always wanted to visit and observe Hawaii's volcanoes," said Goldman.

"Robby's work has excellent potential for helping scientists understand the interplay between host rock stress evolution and eruption timing and location. Thanks to support from NSF GRFP, he is beginning work to better understand the interaction of earthquakes and dike



Many of the UIUC Geology alumni who were on hand for the NHB Grand Opening celebration on November 4th, 2017 gathered near the rebuilt grand staircase in the north end. Over 50 Geology alumni from across the country attended the various festivities that day.

## LETTER FROM THE HEAD

This year has been full of great success and a few major transitions. The department is truly on a roll, with a wave of awards and honors bestowed on students and faculty in recent years (see article, page 1), and with renewed visibility in our impressive, reborn NHB home on the quad. We were elated to see so many of you at the NHB grand opening celebration on November 4th, 2017. One of the most rewarding aspects of my role as department head is interacting with alumni from all eras, and showing you all the great things that are happening here.

With the work related to the NHB project fading away, we are turning our focus to strengthening our education and research programs, and serving a larger number of students in more ways. And, as Steve Marshak has just retired (or “graduated” as we prefer to say), we are transitioning from some 18 years (!) of his leadership, first as Geology department

head, then as Director of the School of Earth, Society and Environment. We will miss his energetic and caring leadership.

The department is extremely grateful for the many donations from alumni and friends over the past year. Many of you donated generously to the NHB campaign. We are wrapping up that effort, though opportunities for named spaces are still available. Our fundraising focus is shifting to other urgent needs:

- Support for field trips is much needed right now, as some sources of support have declined and costs continue to climb for course field trips (e.g., Baraboo and the Saint Francois Mtns.), the spring GEOL 415/515 field course, and the summer field camp. We believe field experiences are more important than ever, and we don’t want students to be deterred by field trip fees that must be added to Geology courses, or by the cost of our rigorous, six-week summer field camp.
- Undergraduate scholarships are increasingly important these days. Higher tuition and fees are a daunting challenge for many families and we hope to greatly increase scholarship opportunities specifically for Geology majors.

- Graduate fellowships funded by generous gifts over the past 25 years have greatly enhanced our grad program; we use them mostly to recruit our top applicants. We aim to build up the endowments further, to increase the number offered each year and enhance that success.

To see a list of current high-priority giving opportunities and/or to make an online gift, please visit the department web page ([www.geology.illinois.edu](http://www.geology.illinois.edu)) and click on the “GIVE” link in the upper right corner. Alternatively, please use the donation envelope inside this newsletter. If you need help with any method of donation, feel free to call the department at (217) 333-3540.

Please drop in whenever you are in the area—we love to catch up with our alumni and friends! Our LinkedIn group, “UIUC Geology Alumni” has over 160 members and is increasingly helpful as a way for our alumni to connect, and to recruit or search for job opportunities—if you’re not a member already, please join. And as always, we love to hear from you when you send your news to us at [geology@illinois.edu](mailto:geology@illinois.edu).

Cheers,

*Tom Johnson*  
Tom Johnson

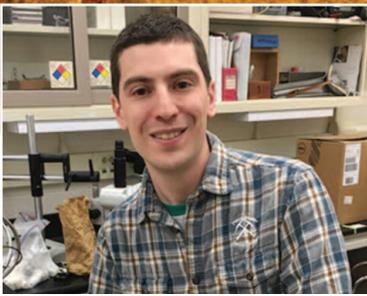
*Year in Review* is published once a year by the Department of Geology, University of Illinois Urbana-Champaign, to highlight the activities and accomplishments within our department and feature news from our alumni and friends.

Department Head: Tom Johnson ([tmjohnsn@illinois.edu](mailto:tmjohnsn@illinois.edu))

Co-editors: Matt Cohn and Lana Holben

Graphic Design: Pat Mayer

[www.geology.illinois.edu](http://www.geology.illinois.edu)



## Paleontologist Max Christie Settles into Department

**D**r. Max Christie joined the department as a lecturer in August, 2017, weeks after completing his Ph.D. in Geology from Penn State. He has already become a key figure in our educational programs. We asked Max to describe his interests:

### What is your academic background, and what are your current research interests?

I studied biology and ecology as an undergraduate. Given that early training, I tend to see the ancient world through an ecologist's lens. I'm interested in how animals respond to times of stress, such as environmental change and extinction events. I tend to focus on marine invertebrates because there are so many of them in the fossil record, and they can answer large-scale questions like, how does extinction affect ecosystem functions, or how do species move their geographic ranges in response to extinction?

### Please share a few teaching highlights since joining the Geology faculty.

One of my favorite things is taking students out to the field. There's no substitute to getting on the rocks if you want to learn about geology. I took my Sed-Strat students to Indiana to look at a Carboniferous fluvial channel and oxbow lake, and we tried to fit the outcrop into a depositional model. A proud moment for me was watching small groups of students sketching hypotheses in their field books, and coming to the conclusion that this had to be an ancient river system.

I also really enjoyed working at the Wasatch-Uinta field camp with over a dozen Illinois students. Watching them use the accumulated knowledge of several years' worth of geology classes, and helping them take seemingly

disparate geological data to make sense of a geologic scene is extremely rewarding.

### How did you begin using drones in the field, and how it has supplemented your teaching?

I got into flying UAVs (drones) because it's fun, but I quickly realized their potential for research and teaching. Bird's eye views of an outcrop are a huge advantage when looking at stratigraphy. In addition, new techniques like Structure from Motion allow us to build accurate 3D models of large outcrops that can be measured as if we were there. In my teaching, I have used UAVs to build 3D models of field areas so students can virtually see landscape features before and after we go in the field, which is a great way to review and reinforce geoscientific concepts.

## 2017 Alumni Achievement Award: Jim Kirkpatrick

**O**n November 3rd, 2017, Prof. R. James Kirkpatrick (PhD '72) accepted our Alumni Achievement Award, and presented a lecture "NMR Spectroscopy and Computational Molecular Modeling of Mineral Surfaces and Interlayer Galleries: Structure, Dynamics and Energetics."

Jim served at Illinois for nearly thirty years, as an Illinois Geology faculty member, department head (nine years), and R.E. Grim Professor. He also thrived in administrative roles, first as head of our department, then for ten years as Executive Associate Dean of the College of Liberal Arts and Science. He then became Dean of the College of Natural Science at Michigan State University (2007-2018), where he remains on the Department of Chemistry faculty.

Jim's research career began in igneous petrology, and he soon developed



a fruitful collaboration with Prof. Eric Oldfield in the Chemistry Department, applying rapidly developing Nuclear Magnetic Resonance (NMR) methods to explore the structure of silicate liquids quenched to glass. The NMR work expanded to studies probing how ions in water interact with mineral surfaces, and the interlayer spaces of clay minerals. Later work with computer modeling yielded important new insights into ion dynamics. Jim is an author on over 250 peer-reviewed publications.

2015 was a banner year, in which Jim received the Mineralogical Society of America (MSA)'s Dana Medal; the Clay Minerals Society's Marilyn and Sturges W. Bailey Distinguished Member Award, and was elected an American Association for the Ad-



vancement of Science (AAAS) Fellow. Geology professor emeritus Craig Bethke (PhD, '85) was one of Jim's many successful doctoral students, and wrote his AAAS nomination letter.

"Kirkpatrick's work led to new understanding of the short-range order in the structures of alumina, silica, and aluminosilicate minerals. He went on to use NMR to define the nature of borosilicate and phosphate glasses, the structures of clays, and the sorption of ions onto mineral surfaces. More recently, he has created an intellectual bridge between geoscience and materials science. In these efforts, he has contributed fundamental understanding of the atomic structures of cements and concrete, two of the main building blocks of our modern world," wrote Bethke.



## Donor Profile Jack C. and Katy I. Threet

Jack and Katy Threet are among the most loyal, long-term supporters of the department. Jack served as a member, and a chairman, of the Geo Thrust committee, the alumni group that completed a 3 million dollar campaign in 2005. He and Katy created the Jack C. Threet and Richard L. Threet Endowed Professorship in Sedimentary Geology, gave generously to the Texas-Louisiana Graduate Fellowship fund, and most recently sponsored the Jack C. and Catherine I. Threet Gateway that is the nucleus of the department in the reconfigured Natural History Building. They have made many annual gifts to the Geo Thrust fund over the years. Jack received the Dean's Quadrangle Award from the College of Liberal Arts and Sciences in 2011.

Jack began studying at the U of I in 1946. His father had moved the family to Champaign from Dundas, Illinois (population 100) in order to facilitate his sons' attendance at the university. Jack recalls that, by living off campus with his folks and working summers at construction sites, he was able to afford a college education. "After all, tuition was \$35 per semester and other expenses were equally modest," he adds.

*(continued on page 7)*

## An Extraordinary String of Awards for Grad Students and Faculty!

*(continued from page 1)*

propagation leading to flank eruptions on the Big Island of Hawaii," said Prof. Gregg.

Jack Albright's doctoral research, also with Prof. Gregg, focuses on combining volcano-monitoring data sets with multi-physics finite element models to forecast volcanic unrest. He is currently investigating the 2008 eruption of Alaska's Okmok Volcano to better understand what triggered this event. "Jack's work will greatly help monitoring agencies to get the most out of their geophysical datasets. Thanks to the support from NSF, he can take his methods in new and exciting directions to better understand how volcanoes evolve and what triggers their eruption," said Gregg.

Prof. Gregg's group has, stunningly, a third prestigious fellowship winner: Yan Zhan has been selected for a NASA ESS fellowship, a highly competitive, 3-year fellowship awarded to only about 10% of applicants. Yan's NASA ESS Fellowship will support his PhD work, applying High Performance Computing data assimilation approaches to investigate the 2006 eruption of Korovin Volcano in the Aleutian Arc.

Department head Tom Johnson expressed his elation at the grad students' string of successes: "Having so many of

these prestigious federal fellowships in such a short period of time attests to the extraordinary talents of grad students who have joined the department over the past few years. The fellowships advance the students' careers, the productivity of our research groups, and the reputation of the department simultaneously!"

While the grad students have been so successful with fellowship applications, the past few years have seen an exceptional string of awards and achievements for Geology faculty and staff as well. Most notably, Prof. Gary Parker, W. Hilton Johnson Professor of Geology, was elected to the National Academy of Sciences (NAS) in 2017. This is one of the highest awards bestowed on scientists nationwide, with only about 80 selected each year, nationwide, across all the sciences. NAS Fellows are recognized for their outstanding contributions to science, and are charged with providing scientific advice to the government "whenever called upon."

Two Geology faculty received prestigious National Science Foundation (NSF) CAREER grants: Prof. Trish Gregg this year, and Prof. Lijun Liu in 2016. These rare and coveted grants provide five years of sup-

port for programs that integrate education and scientific discovery. Trish and her students are using sophisticated geodynamic models to investigate catastrophic caldera eruptions and forecast volcanic unrest, and the eruption potential of volcanoes in the Aleutians. Lijun and his students develop geodynamic models that integrate many aspects of Geology on continental scales, from structure and tectonics to igneous petrology. Lijun also received the American Geophysical Union (AGU) 2015 Jason Morgan Award, given to the top early-career tectonophysics researcher.

Several faculty were recognized by scientific societies for career contributions: Prof. Jim Best was named an AGU Fellow in 2015, and was awarded the European Geophysical Union's 2018 Lamarck Medal for "major contributions to our understanding of physical sedimentary processes and their products in the geological record." Ralph E. Grim Professor and LAS Dean Feng Sheng Hu was elected a lifetime Fellow of the Ecological Society of America, for "paradigm-shifting research in paleoecology and important contributions to understanding climate change and ecological impacts, particularly in arctic and boreal regions." Prof. Tom Johnson was elected Fellow of the Geological Society of America, in recognition of his fundamental contributions to the analysis of chromium, selenium, mercury, and uranium isotopes in the context of environmental geology, and his departmental leadership.

Prof. Jessica Conroy was named a 2017 Kavli Fellow by the National Academy of Sciences (NAS). The Kavli Frontiers of Science symposium series is the premiere NAS activity for distinguished young scientists, who participate in an international symposium to report on current research within their disciplines to an academically trained and scientifically diverse audience.

Prof. Jenny Druhan received an "R&D 100" award for co-developing Crunchflow, a software package for modeling groundwater flow, solute transport, and subsurface chemical reactions. Professor Emerita Sue Kieffer received the 2017 Marcus Milling Legendary Geoscientist Medal. And finally, Office Administrator Lana Holben earned an LAS Staff Award in 2016!

## Spring Field Course Returns to the Highlands!



The department's spring field course, Geology 415/515, returned to Scotland in May. Prof. Michael Stewart and Adjunct Prof. Kurt Burmeister (Ph.D., 2005) led the trip, with help from Profs. Alison Anders and Patricia Gregg. Burmeister, a professor at University of the Pacific and Co-Director of our Wasatch-Uinta Field Camp has assisted on our past field excursions to Arizona, Ireland, and Scotland. The course continued the department's tradition of student field study in Scotland, dating back to the 1970's and 1980's, when the late Prof. Dennis Wood ran a very popular Highlands field course that attracted students from across the country. This year's version included twenty-two undergraduate and graduate students on an eight-day expedition.

The students worked at world-class field localities, and also followed in the footsteps of James Hutton, the founding father of geology, as well as other giants in geology, including Lapworth, Peach and Horn, Nicol and Murchison, to the places where the theories of uniformitarianism, thrust tectonics and glaciology were founded. Prof. Stewart says, "The field localities in Scotland provide unique opportunities for students to observe and

grapple first hand with the same exposures that led to some of the most profound and fundamental concepts in the geosciences."

Each year the field course, funded in part by a donation from Shell Oil Company, combines a semester-long series of lectures and student presentations with several days of observation, discussion, problem solving, and synthesis on the outcrops. The field trip began in Edinburgh, where students visited Hutton's grave, then continued to Siccar Point, where they observed Hutton's unconformity and pondered geological time. The trip continued through the highlands, to many classic localities, including the Glen Coe volcanic complex, the Parallel Roads of Glen Roy where Agassi puzzled with glacial advances, the mylonites of the Moine thrust, Tertiary volcanism on the Isle of Skye, and a variety of glacial and Quaternary features. "Scottish geology provides a superb opportunity to observe a great diversity of geological features in a relatively small area. The travel time and cost of airfare are more than offset by the ability to work at so many excellent localities while driving only a few hours per day," says department head Tom Johnson.



Left: Students observe Hutton's unconformity at Siccar Point.

Top: Students take notes in their (hopefully) waterproof notebooks as Prof. Stewart explains the geology at Eriboll. This was the one day students and faculty experienced "classic Scottish weather" on the trip.

Bottom: Prof. Gregg and grad student Yan Zhan at the Moine Thrust.

In recent years, the spring field course has rotated between Scotland, Ireland, Arizona, and Cyprus. Geology 415/515 has been one of the high points of students' careers at Illinois. Bailey Moser (BS '18) appreciated the world-class exposures of a wide range of geologic features: "The geologic field work in Scotland connected to my Geology studies at U of I; we used field skills and knowledge from various courses to sort out the complex geology of Scotland. Given Scotland's complicated and diverse geology, it was necessary to utilize Sed/Strat, Petrology, Structure and Tectonics, Volcanology, and Earth History." Graduate student Yan Zhan reflected on the importance of field work: "The field is our best teacher. Although the basic geological theories have been established, there are still a lot of unanswered questions we can explore in the field. The field geology teaches us to be humble, that our knowledge of the Earth is still minor compared to the infinite detail of the field."

## Faculty Spotlight: Jessica Conroy

Jessica Conroy's research has taken her to the Galapagos Islands, to the windswept Tibetan plateau, and to Kiritimati, the remote central tropical Pacific atoll known as Christmas Island. She and her graduate students are (literally) testing the waters in these remote places to piece together Earth's prehistoric climate and rainfall patterns, and ultimately help chart its future.

Conroy specializes in paleoclimatology, the science of extracting climate records from material including sediment, coral, shells, and ice sheets, which she refers to as natural climate archives. Each of her far-flung field sites contain valuable paleoclimate data due to their seclusion from human activity over the millennia, and their locations at the anchor points of major rainfall-controlling systems. The Tibetan plateau's steep rise strengthens India's monsoon, and the Galapagos and Kiritimati mark El Niño's eastern and western starting points.

"My group is particularly interested in what we dub 'hydroclimate.' We want to know how the earth's water cycle has varied in the past, and how it may change in

the future. Water is critical to humans and the natural world, so understanding how patterns of rainfall can shift, weaken, or strengthen is extremely important in light of projecting such changes on a future, warmer earth."

In July 2017, Conroy was invited to the Kavli Frontiers of Science symposium in Ambon, Indonesia (notable for its location at the edge of El Niño's western starting point). The Kavli Foundation brings together emerging scientists, encouraging them to collaborate and share data across disciplines. Conroy presented several strategies to make paleoclimate data more useful to climate modelers and other geoscientists, who might not have the chance to visit Tibet or Kiritimati. For instance, her lab was able to translate their sediment measurement data into monsoon precipitation data, which are essential data variables for climate modelers.

Closer to home, Conroy and her students are making full use of the new Paleoclimate Lab (Room 3041 NHB). Current projects include geochemical analysis of lake, dune, and loess sediments, and measuring the stable isotope

ratios in their wide array of tropical Pacific rain and seawater samples. They are also collecting and analyzing Midwestern rain samples as part of a new project to investigate controls on precipitation; and creating a large database of stable oxygen isotope values from land snails in Midwestern loess deposits to reconstruct changes in precipitation during the last glacial period.

Department Head Tom Johnson is very pleased with Conroy's rapid rise as a scholar and educator in her 5 years at Illinois: "Jess has quickly built a productive research group and laboratory, obtained funding from NSF and the Petroleum Research Fund, and mentored three grad students through the completion of their degrees. She clearly has an international reputation for her research, and is pursuing a variety of new projects. Her contributions on the teaching side have been excellent as well, ranging from our large Geology 100 Gen Ed course to an advanced graduate class. She and the other new faculty have energized and strengthened this department greatly over the past several years!"



Prof. Conroy's research group, from left: Sarah Dendy, Mingfei Chen, Viothan Sivapalan, Jessica Conroy with son Rexford, Melinda Higley, and Allie Wyman.



In the field, after a long day coring lakes on Kiritimati. The insects were so thick the field party had to cover their mouths with bandanas. From left: Dr. Christina Karamperidou (Univ. of Hawaii), grad student Melinda Higley, Prof. Conroy, and grad student Allie Wyman.

## Undergraduate Student Profile – John Luchok '18



**J**ohn Luchok (BS, 2018) peered down Nevada's vast Carlin gold mine, and stargazed at Utah's San Rafael Swell during this summer's Wasatch-Uinta field camp, reflecting on his time at Illinois as he prepares to start a career in the mining industry this fall.

As a freshman, John quickly discovered that Geology majors were a tight-knit group who took every available opportunity to explore Earth's natural and engineered landscapes. He meandered through Turkey Run State Park's sandstone canyons and scaled Missouri's St. Francois

Mountains during the Geology 107 and 208 field trips, but his most memorable field experience was Prof. Marshak's GEOL 415 trip to the southwestern U.S. "We visited the Badwater Basin, which is the lowest point in the U.S., and the surrounding Death Valley National Park. I had never been to that part of the country, and I especially enjoyed seeing the metamorphic core complexes caused by Cenozoic extension in Arizona."

John excelled in his on-campus Geology coursework, and always sought out additional hands-on learning experiences. With Dr. Jacalyn Wittmer, he studied fossils and their host rocks to determine the paleoecology, sedimentology, and stratigraphy of part of the Cincinnati Arch. He also worked for the Illinois State Geological Survey, digitizing cores and maps in the Coal Geology section; and sampling and photographing carbonate cores for isotope testing in the Bedrock Geology and Industrial Minerals section. In John's "spare" time, he even helped

organize and catalog our department's fossil collection!

Off-campus, John took a mineral processing internship with Freeport-McMoRan Copper & Gold Inc. in Tucson, Arizona in the summer of 2017, which solidified his interest in the mining industry. Starting this fall, he will start as a consultant for Alight Mining Solutions, a hard-rock mining technology start-up in San Francisco. John will help configure Alight's cloud-based planning and forecasting applications using mining principles related to engineering, geology, and business.

"The Geology Department at Illinois served as my bedrock in helping me achieve my goals. From the first Physical Geology lecture as a freshman until now, every class has challenged me to be the best geologist I can be. I couldn't have asked for a better or more supportive group and am proud to call myself an Illinois Geology alum!"

### Donor Profile

*(continued from page 4)*

But shortly after enrolling in Aeronautical Engineering, he began thinking about other careers, including oil exploration, which he saw as a young boy during the boom in southern Illinois. It was his older brother, Richard, who re-kindled Jack's interest in Geology. By the time Jack had finished two years of engineering, Richard had his Master's degree in chemistry at U of I. But he had decided he should get a Ph.D. in Geology, which he did, later becoming Professor of Geology at Nebraska, Utah, and finally at San Diego State. "I could sense Richard's growing interest in Geology as he switched from chemistry. So it made my switch to Geology even easier and I will be forever grateful he did." Jack still recalls the change from the larger, more structured classes in Engineering to the smaller, more personalized classes in

Geology, where answers were often less obvious. "I especially enjoyed my classes in stratigraphy and sedimentation."

After receiving his B.S., he stayed on for graduate work under Harold Scott. During the first semester, Jack received a \$500 stipend from Shell Oil Company to continue his studies and an offer of a summertime job as a junior stratigrapher. Having just married Katy, that spring stipend and job offer were, in Jack's words, "Huge. It matched our needs for sure." Near the end of that summer of 1951, Shell offered him a full-time job in lieu of returning to school. Except for two years in the military, that summertime job turned into a 36-year career at Shell! He served as exploration manager at many locations in the U.S., Australia, and Canada, and was promoted to Vice President of Exploration and Production in Canada, then New Orleans and Houston, before spending his last nine years as Vice President of Exploration of Shell Oil. It was an illustri-

ous career that Katy recalls required 35 moves!

"Obviously, none of this would have been possible except for my father's wisdom and zeal to help his sons to get a college education, by moving the family to Champaign. That move allowed me to study under Professors White, Wanless, Kummel, Henderson, and others, and reap lasting and immeasurable benefits of an excellent, broad education in the Earth Sciences at U of I! That experience, coupled with the always-present support of Katy and our two daughters, made everything possible along the way."

In addition to the Threats' support of Geology at U of I, they are also strong supporters of many other organizations, including the AAPG, AGI, YMCA, Rotary, and a number of churches, hospitals, and charities. Jack served as an officer or board member of several of these organizations.

## Steve Marshak “graduates” to become Professor Emeritus

After 35 years of dedicated teaching and advising, research, and administrative service, Prof. Stephen Marshak is retiring from the Geology faculty, and from his role as director of the School of Earth, Society, & Environment (SESE). In these roles, he oversaw pivotal moments for Geology and SESE, including the \$78M Natural History Building renovation, the solidification of SESE as an alliance of three Earth-related departments (Geology; Geography & GIS; and Atmospheric Sciences), and the evolution of SESE’s interdisciplinary major. Throughout, he continued teaching core geology courses, maintained a research program in structural geology and tectonics, advised graduate students, and managed to keep up with his “hobby” of writing geology textbooks.

Teaching was always Steve’s favorite part of the job. He enjoyed the challenge of introducing geoscience to students, whether to a large class of non-majors in Geology 100–Planet Earth, or to graduate students in Geology 511–Advanced Structural Geology or 512–Geotectonics. Steve also led many field courses, including the Arizona-California GEOL 415/515 trip and the Wasatch-Uinta field camp. “It’s just great to be able to see the light bulb go on when a new student suddenly understands what a geologist sees, when looking at an outcrop,” he says.

His contributions to geoscience education were recognized with two College of LAS teaching awards, two campus-level teaching awards, and the Neil Miner Award from the National Association of Geoscience Teachers. Steve feels privileged to have served as the principal adviser for 30 graduate students, almost all of whom remain active in geology (some in academia, some in industry, and some at federal or state agencies).

Steve’s field work took him not only to locations around the United States, but also Brazil, north Africa, Europe, Asia, and Antarctica. He has contributed to the understanding of fold-thrust belts, rock



Steve Marshak in Death Valley, leading a recent GEOL 415/515 field course.

fabrics, Precambrian tectonics, and Midcontinent tectonics. Recently, he participated in an EarthScope project to try to understand what’s under the Illinois Basin and Ozark Plateau, for, as he notes, “There are a lot of fascinating geological puzzles beneath the plains that remain to be solved.” This work contributed new ideas concerning the formation of the Great Unconformity, a global erosion surface separating Precambrian and Paleozoic rocks.

During his eight years as Geology department head, Steve particularly enjoyed getting to know alumni in connection with the Geo Thrust Campaign, which added \$3M to the Department’s endowment. As SESE director, Steve guided the transformation of the Natural History Building into a 21st-century teaching and research facility. He was a tireless advocate for the interests of the school and its departments, chairing the committee that worked closely with architects and engineers to ensure that the building met the needs of those who would populate it, while at the same time respecting NHB’s distinctive features.

Steve and his wife/editor Kathy will be staying in town, and he plans to keep

in touch with the department and SESE. In the near term, he will focus on finishing research papers, completing new editions of his SIX textbook titles (used at hundreds of colleges and universities worldwide), and writing the first editions of a couple of new books. This summer and fall, Steve will participate in a field trip along the northern edge of the Tibetan Plateau, after which he will teach a short course in China. Then he and Kathy will host a University of Illinois alumni trip along the coast of New England. Is this really “retirement”?

Department head Tom Johnson says, “Steve’s teaching, research, and administrative efforts have had a huge, positive impact in the department, SESE, and the broader geoscience community! Steve prefers to call this transition “graduation” rather than retirement, and we agree with him because his work on the best textbooks in the business is, in itself, a full-time job! We are already missing his dedicated contributions to this campus, but we also know we’ll see him frequently and continue to count him among the department’s active members.”

## AROUND THE DEPARTMENT

**Stephen Altaner** served on the organizing committee for the 55<sup>th</sup> Annual Meeting of the Clay Minerals Society, hosted by the Univ. of Illinois. He led a full-day field trip to the Starved Rock State Park area and a half-day field trip to sites that feature clay minerals in mudstone, soil, and a moraine. He also chaired and presented a talk at a thematic session on Teaching of Clay Science. He continues to coordinate the department's teaching program as Associate Head, and teaches online classes during the summer and winter sessions.

**Alison Anders** and her group have been working on the development of the Illinois landscape from Quaternary glaciation through to the modern agricultural system, as part of an NSF-funded Intensively Managed Landscapes Critical Zone Observatory (CZO). Alison, along with her students and colleagues have published papers on the geomorphology of Illinois episode glacial deposits, a conceptual model for the critical zone of the glaciated Central Lowlands, and numerical modeling of the growth of river networks following glaciation. She co-taught the GEOL 415/515 field course in Scotland, where students appreciated glacially-influenced landscapes and sheep.

**Dan Blake** continues his studies of the fossil record of asterozoan echinoderms (starfish, etc.). He published a monograph, *Toward a History of the Paleozoic Asteroidea*, in the May issue of *Bulletins of American Paleontology*, and a co-authored paper on a Cretaceous asteroid from a South Dakota seep deposit in March of this year. Dan's Antarctic seep deposits are a thing of the past, unfortunately. A bachelors-degree alumnus, Dan still greatly enjoys participating in the Geology Alumni Advisory Board.

**Jessica Conroy** had a productive academic year. After the long, winding road of writing and revisions, her lab published exciting new papers in *Quaternary Research*, *Paleoceanography and Paleoclimatology*, *Geology*, and *Journal of Geophysical Research-Atmospheres*. Two new PhD students—Mingfei Chen and Sarah Dendy—joined the lab, and soon-to-be Dr. Melinda Higley landed a job at the Ohio Geological Survey!

**Jenny Druhan** oversees the new Hydrogeochemistry laboratory at NHB, which features multiple aqueous and gas phase reactive transport analytical capabilities. Her recent work has emphasized the relationship between the range of times and pathways by which fluids move through the subsurface and the resulting chemistry of groundwater and rivers, and she received an R&D 100 award for related reactive transport software development. Two of her PhD students, Yuchen Liu and

Nicole Fernandez-Franzen, successfully passed their preliminary exams, and MS student Max Giannetta graduated in May. Jenny has also taken on a new role as an Associate Editor for *Water Resources Research*, AGU's principle hydrology journal.

**Bruce Fouke** continues to serve as Director of the Carver Biotechnology Center (CBC), a core research and service facility on campus. The CBC core facilities are staffed by 42 full-time scientists who provide more than 450 Illinois faculty with analyses in DNA Services, High-Performance Computing Bioinformatics, Functional Genomics, Proteomics, Metabolomics, and Flow Cytometry. The Fouke research group continues to work on several externally-funded geobiology research topics, including coral skeletal density banding on the Great Barrier Reef, travertine depositional dynamics in Yellowstone, kidney stone dissolution with the Mayo Clinic, and oil field biosourcing. Ongoing education and public outreach programs include field courses in Yellowstone and Curacao, workshops at the Field Museum and St. Louis Science Center, multiple online courses attended by more than 30,000 participants each year, and a Scholar-Athlete program for more than 600 athletes in collaboration with the Illinois Division of Intercollegiate Athletics.

**Willy Guenther** spent the last year building up HAL, a new laboratory for (U-Th)/He analysis, as well as advancing various research projects. He received two NSF grants, one for laboratory technician support, and another to examine mountain belt uplift and erosion in Idaho and Montana. He has recently become very interested in documenting the timing of erosion associated with the Great Unconformity—the global horizon that separates the Cambrian from the Precambrian. Willy taught Structural Geology for the first time last fall, taking over for Steve Marshak who taught the course for 30+ years (big shoes to fill indeed!). The highlight, as always, was the field trip to Wisconsin's Baraboo Hills.

**Sue Kieffer, Jim Best** and **Eckart Meiburg** (U.C. Santa Barbara) have been working on the role of vortices in high-speed erosive boundary layers, and presented applications of the work to furrows on Volcán Bárcena, Mexico (7<sup>th</sup> Internat. Maar Conf. in Olot, Spain) and furrows on Martian impact craters (GSA Seattle). She gave a presentation at the 2018 Resources for Future Generations meeting in Vancouver, B.C., on a year-long project she undertook with a middle-school teacher in Phoenix on teaching science and critical thinking to homeless and at-risk students. They are now adding the material to the SERC/Carleton teach-

ing resource website. Sue is in her fourth year of serving both on the Resilient America Roundtable of the National Academy of Sciences, and as one of two vice-presidents of the International Association for Promoting Geoethics (IAPG).

**Lijun Liu's** group had several major achievements during the 2017-2018 academic year. Prof. Liu was promoted to Associate Professor in May 2017 and named the GeoThrust Professorial Scholar. He served on one NSF panel, performed multiple interviews with popular media, and presented about 15 invited lectures at major conferences, institutions, workshops, and public forums. Two graduate students, Jiajun Hu and Quan Zhou, successfully defended their PhD theses in May 2018, both having their PhD work published in multiple high-profile journals—including two *Nature Geoscience* articles in early 2018. Dr. Hu is now heading to Caltech for a Postdoc, and Dr. Zhou was hired as a software engineer at Granular in California.

**Xiaodong Song**, Ph.D. student Jiangtao Li, and colleagues developed an improved method to image crustal structure by incorporating P wave constraints into a popular method of the joint inversion of receiver functions and surface wave dispersions (published in *Journal of Geophysical Research*). Xiaodong recently stepped down from the Chair and Chair-elect of International Professionals for Advancement of Chinese Earth Sciences (IPACES), and has taken on Associate Editorship of the journal *Earth and Planetary Physics* (EPP).

**Gillen Wood** has been appointed Associate Director of the Institute for Sustainability, Energy, and Environment (iSEE), and will continue to serve as director of the Certificate in Environmental Writing (CEW). Gillen's principal role in the department is teaching environmental writing, and editing an online magazine featuring students' original work. Gillen will teach a signature department course, GEOL 201—History of Geology this Fall, while pursuing multiple research projects in geology-related subjects. He continues to give lectures here and abroad on his 2014 book about the Tambora eruption, including at the Huntington and Morgan Libraries and at NASA in Washington. Gillen is currently finishing a new book on the scientific discovery of Antarctica, scheduled for publication by Princeton University Press in 2019.

## 1950s

**Jim McCollum (BS '56)** stopped in for a visit at the Natural History Building. He is now teaching as an adjunct professor at Southern Arkansas University.

## 1960s

**John Hawley (PhD '62)** closed down Hawley Geomatters, his illustrious consulting firm, after it completed its "20th and final year as a personally rewarding and productive small-business adventure, which was definitely not noted for its success as an economically viable activity." John and his wife, Diane, look forward to traveling in the future.

**John Tubb, Jr. (MS '61, PhD '63)** was awarded the Houston Geological Society's President's Award, for his "unflinching dedication behind the scenes as Chairman of the Office Management Committee... Chairman of the Scholarship Night Committee and the Directory Committee this year." John has received other HGS awards, including the Distinguished Service Award and the Society's highest honor, the Gerald A. Cooley Award in 2013 for his service as Treasurer-Elect, Treasurer, President-Elect, and finally as HGS President in 2010-2011. John remarks, "I attribute much of my professional success to the training, guidance, and encouragement that I received during my stay at the U. of I., especially from Prof. Wanless. Outside of family members, Prof. Wanless was the most influential person in my life."

## 1970s

**William I. Ausich (BS '74)** received, at the AAPG/SEPM meeting in Salt Lake City, the 2018 SEPM Raymond C. Moore Medal for Paleontology, which recognizes excellence in paleontology. Bill is Professor Emeritus at Ohio State, having stepped down from teaching a few years ago. He published frequently and enjoys having more time for his research: "Finally in retirement, I can return to my passion!"

**Nancy Beresky (BS '78)** celebrates her 40<sup>th</sup> year as a geologist, the past 28 years as an environmental consultant. She is currently Managing Principal Hydrogeologist for Waterstone Environmental, Inc. in Anaheim, CA. She often serves as an expert witness, evaluates environmental issues on commercial or industrial sites, and performs assessment and cleanup/closure of contaminated properties. Nancy is retiring in 2019 and will relocate to Champaign, IL to be closer to family and her beloved Illini.

**Tricia Santogrossi (BS '74, MS '77)** has accepted a permanent position at Geophysical Insights after serving as a consultant for three years.

## 1980s

**David Bieler (PhD '83)** is chair of the Department of Geology at Centenary College of Louisiana. He is very involved with coordinating and teaching classes in the Centenary in Paris study abroad program.

**Jeff Turner (BS '83)** recently observed his 30<sup>th</sup> anniversary at the Illinois Environmental Protection Agency in Champaign. His duties there include groundwater monitoring compliance evaluations of hazardous and solid waste disposal sites and over-



Curt Abert (BS '92), Andrew Louchios (BS '02), James Cokinos (BS '02), Chris Korose (BS '96, MS '10) at the ESRI GIS conference in San Diego, CA. This group of alumni worked together at one time or another at the Illinois State Geological Survey.

sight of underground waste injection facilities, as well as general regulatory compliance evaluations of landfills, small businesses, and industrial facilities.

## 1990s

**Laura Keefer (BS '90)**, head of the Watershed Science Section at the Illinois State Water Survey (ISWS), has been named Illinois State Hydrologist, one of seven state scientist positions enshrined in Illinois law and based at the University of Illinois' Prairie Research Institute. In this role, Laura will provide science-based information and leverage the expertise of Water Survey staff on statewide water issues.

**Rod Padgett (BS '91)** manages a petroleum production and consulting business in southeastern Illinois. He has some production of his own, and manages crude oil production for some other companies. Rod also consults on well design location, and stimulation (such as fracking, acidizing). He supervises new well construction from a geological and project management standpoint. Rod works mostly in Illinois, Indiana, and Kentucky; but has consulted on projects in Oklahoma and Texas.

**Lisa Whitenack (BS '99)** has been promoted to Associate Professor of Biology at Allegheny College. In addition to teaching and supervising student research in both the biology and geology departments, she continues the fossil shark research that began with her senior thesis at Illinois. This led to her being one of ten featured female shark scientists to speak at the first "Shark Tales: Women Making Waves," a symposium organized by the Gills Club, an education initiative of the Atlantic White Shark Conservancy.

## 2000s

**Melissa Chipman (MS '07)** completed her PhD in Plant Biology here at Illinois, and will begin a tenure-track faculty position at Syracuse University after completing a post-doc at Northwestern.

**Matt Kirk (MS '04)** and Brenee welcomed a baby boy on Christmas day. Matt is an associate professor at Kansas State University.

**Tom Schickel (MS '06)** has announced his new business, Schickel Resources, LLC. He is living in the Pittsburgh area.

After 11 years at Stantec, **Anna Sutton (BS '01, MS '03)** joined Cardno in April for an opportunity to grow their environmental assessment and remediation group in the Midwest. She is based out of their Monee, Illinois restoration services office. Anna continues to serve as treasurer for the Illinois-Indiana section of the American Institute of Professional Geologists. Anna's daughter Aurora will turn two in September. The family loves spending time on the Lake Michigan shore whenever they can get away.

## 2010s

**Allison Greaney (BS '14)** is pursuing a PhD in geochemistry at UC Santa Barbara.

**Sean Griffin (BS '17)** joined Citizen Energy in Denver, CO, an oil company based out of Tulsa, OK. As a geologist with Citizen Energy, Sean conducts data analysis and subsurface mapping.

**Jessica Hinton (MS '16)** started working as a geologist for the US Army Corps of Engineers in Nashville, TN in December 2017. She is working with a team of geologists and engineers to design and build new locks on the Cumberland and Tennessee Rivers within the Tennessee Valley. Jessica's job is to identify potential zones of weakness in the bedrock that could affect the integrity of the new locks and the existing dam structures.

**Ashley Lawrence (BS '16)** moved to Grand Junction, Colorado, to work as a physical scientist aid for the Bureau of Land Management.

**Evan Lindroth (BS '17)** is currently a master's student in the Department of Geography & GIS at Illinois.

**Rachel Oien (MS '16)** is a Scottish Alliance for Geoscience, Earth, and Society (SAGES) scholar at the University of Aberdeen, U.K. where she is pursuing a PhD.

**Andrew Ostendorf (BS '10)** has a new position at Barrick Gold Corporation as an Exploration Geologist.

**Zhenhao Zhou (MS '17)** is pursuing a PhD at the University of Toronto.

## IN MEMORIAM

**John A. Ames (MS '50)** No further information.

**Louis W. Butler III (PhD '69)** passed away on January 28, 2018. Lou was an oceanographer with the U.S. Navy Electronics Laboratory and sailed as chief scientist aboard multiple vessels. He later worked for NOAA, in the U.S. Coast and Geodetic Survey's Office of Research and Development, as well as the Office of Ocean Resources Conservation and Assessment. He retired in 1996 after more than 30 years with NOAA.

**Frederick W. Cropp III (MS '56, PhD '58)** passed away on August 9, 2017. Fred taught at UIUC for six years, before joining the College of Wooster where he taught until retirement in 1998. He served as Dean and Vice President for Academic Affairs from 1968-77. "Fred influenced thousands of students at Wooster, and hundreds more during 80 10-day raft trips through the Grand Canyon that he organized and led. All told, he spent more than two years of his life sleeping under the stars in the Canyon!"

**Lester (Les) Woodrow Clutter (BS '48)**, loyal alumnus, former member of the Geo Thrust committee, petroleum geologist, and WW II Army Air Corps veteran, died May 26, 2018, in Tulsa. His 50-year career included work for the USGS, Texaco, Mapco, and CNG and took him to Tulsa, Durango CO, Billings MT, Williston ND, Tripoli, Libya, London, and back to Tulsa. Les was committed and dedicated—family, U of I Geology, volunteering at church and in community, and personal fitness.

**Chad Dobrei (BS '91)** passed away March 22, 2016. While at the Wasatch-Uinta Field camp around 1990, Chad may or may not have been involved in an incident involving a Chevy Suburban, a Utah porcupine, and TWO flat tires. After graduation, Chad had a successful career in environmental consulting, eventually overseeing Tetra Tech's Reno and Las Vegas offices, then becoming East Regional Operations Manager before returning to California in 2013.

**John B. Droste (BS'51, MS '53, PhD '56)** died on February 5, 2018 at the age of 90. John, a WWII veteran, was a professor of geology at Indiana University from 1957-1992. He specialized in the lithostratigraphy of Indiana's Paleozoic rocks, and the study of local and regional tectonic events in relation to petroleum geology. John was known to shake each student's hand before every class.

**John R. "Jack" Dyni (MS '55)** died on September 24, 2017 at the age of 85. John worked for the Army Corps of Engineers in Kansas City and the USGS in Denver, CO. While in Colorado, he earned a PhD in geology at the University of Colorado in 1981. He worked for the USGS for more than 50 years, with expertise in world oil shales and associated minerals.

**Mary Freeman (BS '53)** passed away on December 13, 2017 at the age of 86. During her time at the U of I, she served as president of the Delta Delta Delta sorority. She and her husband lived in Huntsville, Alabama and then South Bend, Indiana where Mary helped found Little Montessori School. Mary later worked for the South Bend City School district.

**Robert N. Ginsburg (BS '48)** passed away on July 9, 2017. Bob, a carbonate sedimentologist, completed B.S. degrees here in both Geology and Chemistry, and completed his PhD at the University of Chicago with Francis Pettijohn. He was one of the first people to discover and identify Holocene dolomite in the intertidal zone of the Florida Keys and Bahama Banks. Bob retired from the University of Miami in 2011, at age 85.

**Donald R. Gorman (PhD '62)** died on April 19, 2018. After graduating from Illinois, Don became a professor at Bradley University, where he taught from 1962-2004. He loved the outdoors, and led many summer field camps in the Midwest, scuba diving in the Florida Keys, and throughout the Pacific Northwest. Don provided transportation for some of these field trips in his home-built camper van, known as the Gorman-mobile.

**Christopher A. Heren (BS '05)** died on December 3, 2017 in Peoria, IL. Chris received bachelor's degrees from Illinois in geology and biology. He also earned master's degrees in theology and systematics from Luther Seminary. At the time of his passing, Chris was an adjunct professor at Illinois Central College and a substitute chemistry teacher at East Peoria Community High School.

**Joanne Kluessendorf (BS '83, MS '86, PhD '90)** passed away on June 1, 2018. Joanne resided in Appleton, WI, and was the founding director of the Weis Earth Science Museum at the University of Wisconsin-Fox Valley in Menasha, Wisconsin.

**Karl J. Koenig (BS '41, MS '46, PhD '49)** died on September 4, 2017 at the age of 97. Karl served in the United States Army after earning his BS, and was awarded a Purple Heart and a Bronze Star for Valor. He returned to Illinois to pursue a master's and PhD degree, and then began a career with Shell Oil Company. He joined the Texas A&M geology faculty in 1955, where he remained until retiring in 1998.

**John E. Moore (MS '58, PhD '60)** died January 6, 2018. John was a well-known hydrologist with the USGS and the EPA. He served as president of the International Association of Hydrogeologists and the American Institute of Hydrology. He was a senior Fellow of GSA, and a member of Sigma Xi. He produced many influential publications, including *Field Hydrogeology: A Guide for Site Investigations and Report Preparation*, and, with Joe Rosenshein (PhD '67), *History of the development of hydrogeology in the United States*.

**Arthur F. Preston (BS '53)** passed away on March 24, 2018 at age 89. He founded the Traverse Oil Company in 1970 along with his three brothers. They made many discoveries in the Nigerian reefs, Michigan's most active oil and gas region. Arthur eventually sold Traverse and moved back to Texas where he continued to discover and develop oil fields. He also loved horses, and owned Oxbow Farm and Preston Stables in Paris, Kentucky.

**Harold C. "Hal" Rasmussen (BS '54)** died on August 5, 2017 in Greeley, Colorado at the age of 88. Hal served in the army prior to graduating from Illinois, and had a long career in petroleum exploration. He enjoyed sailing on the Great Lakes.

**Joseph S. Rosenshein (PhD '67)** passed away on April 21, 2018 at the age of 89. He was a U.S. Army veteran, and worked in the USGS Water Resources Division for over 41 years, where he held multiple leadership roles. A founding member of the American Institute of Hydrology, he served as Chair of the AGU Ground Water Committee, Chair of GSA's Hydrology Division, and President of the U.S. Chapter of the International Association of Hydrologists. Joseph was awarded the USGS Distinguished Service Award and Medal, as well as several other awards.

**Edward L. Rosenthal (BS '69)** died on December 21, 2017. Known affectionately as "Rosie" by his students, Ed was a longtime earth science teacher at Naperville North and Joliet Catholic high schools. He served one term as mayor of Bolingbrook, where he was also a trustee. Ed was also a golf coach, inducted into the Illinois Coaches Association Golf Hall of Fame in 1995.

**William D. "Bill" Sevon III (PhD '61)** passed away on October 8, 2017 in Worcester, MA. He retired from the Pennsylvania Geologic Survey in 2001, where he had worked since 1965. Bill had previously taught at the University of Canterbury in Christchurch, New Zealand. He was a member of the Harrisburg Area Geologic Society, and a Geologic Society of America Fellow.

**Conrad E. Shaw (BS '52)** passed away on June 19, 2018 in Evansville, IN at the age of 92. "Connie" was a WW II U.S. Navy veteran, who worked for over 35 years as a petroleum geologist for several oil exploration companies. He retired in 1986.

**Irwin L. Svoboda (BS '50)** died on June 10, 2018 at age 91. Irv served in the Navy during WW II, as well as the Korean War. He had retired after 40 years as an industrial salesman and had once been an Elk Grove Boys Baseball coach.

**Arthur Wood (BS '46)** No further information.

## In Memoriam



**Prof. Emeritus George Klein**, who taught in the department from 1970 to 1993, passed away on April 30th, 2018. George earned three degrees in geology, his bachelor's at Wesleyan, a master's from the Univ. of Kansas, and his doctorate at Yale, in 1960. George's

academic career began with a faculty position at the University of Pittsburgh. He moved on to the Univ. of Pennsylvania, and finally to Illinois. After his 23 years here, George left to become President of the New Jersey Marine Science Consortium and State Sea Grant Director of the New Jersey Sea Grant College Program; he then returned to geology, developing a consulting firm in Houston and working both nationally and internationally. At the time of his death, George was living in retirement in Guam with his wife, Suyon Cheong Klein.

George worked broadly in sedimentary geology, sedimentary petrology, and basin analysis. He was particularly proud of his recognition of the significance of tidal processes in the geologic record, and of the coining of the word "Tidalite" for tidally-dominated deposits; although much of this work was focused on clastic settings, George extended his work to carbonates. George published 160 refereed titles during his career, and he received thirteen national and international awards for his research.

At Illinois, George was a rigorous and demanding teacher, and his students benefited greatly from his knowledge and breadth of experience. As one former student put it, George was "a man of strong convictions, and who sometimes caused turmoil in his wake." He supervised 7 PhD, 5 external PhD, 14 MS and 5 affiliated research students, many of whom attained significant and influential accomplishments during their own careers. His teaching abilities began at the undergraduate level, with Joan Crockett (BS, '83), for example, commenting "Sedimentology with George made me think about the world in a different way, and it was the most beneficial course I took in terms of working in geology and oil and gas." Dave Heidlauf (MS, 1985) described George as a gifted sedimentologist who challenged his students to think critically and independently, and to make lasting, publishable contributions. Jim Castle (PhD, 1978) found George's personal style of teaching led to his learning a great deal. Jim was struck by George's smile and upbeat demeanor during George's later years, and he was grateful and honored to have known him.

## Student Awards

**Estwing Award**  
Dana Drinkall

**R. James Kirkpatrick Award for Outstanding Graduate Research in Geology**  
Jiashun Hu

**Harriet Wallace Outstanding Woman Graduate Student Award**  
Julia Cisneros

**Harriet Wallace Outstanding Woman Undergraduate Student Award**  
Yunhe Cui

**Harriet Wallace Geology Graduate Student Service Award**  
Robert Goldman

**Harriet Wallace Geology Undergraduate Student Service Award**  
John S. Luchok

**Outstanding Graduate Teaching Assistant Award**  
Spring 2017: Noah Jemison  
Fall 2017: Melinda Higley

**Outstanding Senior Award**  
Cristopher Steven Alvarez Villa

**Morris Leighton Research Grants**  
Michael DeLucia  
Andrew Garcia  
Nathan Fifield  
Michelle Frankel  
Robert Goldman  
Jenna Kaempfer  
Jingtao Lai  
Jiangtao Li  
Xiaobao Lin  
Yi Yang

**Jackson Geology Graduate Student Research Awards**  
Julia Cisneros  
Michael DeLucia  
Max Giannetta  
Jenna Kaempfer  
Olivia Thurston  
Naomi Wasserman  
Yan Zhan

**Winslow Research Grants**  
Max Giannetta  
Noah Jemison  
Jia Wang

**Sohl Award for Research**  
Julia Cisneros

**Midwest Alumni Undergraduate Research Grants**  
Bailey Moser  
Monica O'Brien  
Vinothan Sivapalan

## Degrees conferred in 2017-2018

### Bachelor of Science Degrees

**August 2017**  
Kyle S. Balling  
Andrew J. Birkey  
Joshua D. Erenberg  
Matthew Felch  
Tad W. Gastfield

Tyler P. Hartman  
Sharif Khan  
Stirling H. Lemme  
Colin J. Winter  
Steven S. Zhang

**December 2017**  
Scott J. Constantine  
Isaac D. Foli

Andrew A. Ooley

**May 2018**  
Cristopher S. Alvarez Villa  
Rebecca N. Ambresh  
Yunhe Cui  
Angela L. Fiorito  
Jacob P. Henss

Fredy Martinez  
Samuel B. Shaw  
Vinothan S. Sivapalan  
Blake I. Spitz  
Alex G. Tkaczyk

### Master of Science Degrees

**August 2017**  
**Kalin Howell**, "Paleoenvironments, Architecture, and Heterogeneity of Thick Sandstone Reservoirs in the Mississippian Cypress Formation, Illinois Basin"

**May 2018**  
**Alexander B. Bryk**, "The Influence of Channel-skewed Bedforms on Flow Structure in a High Amplitude Meandering Channel"

**Max G. Giannetta**, "A Revised Monod-type Rate Law Predicting Variable Sulfur Isotope Fractionation Factors as a Function of Microbial Sulfate Reduction Rate"

**Fangruo Zhao**, "Crustal Structure beneath Hi-CLIMB Seismic Array in Western Tibetan Plateau from a Generalized H-K Method"

### Doctoral Degrees

**August 2017**  
**Jing Jin**, "Structure of the Earth's Topmost Inner Core from Seismic Waveform Inversion"

**Eric W. Prokocki**, "The Sedimentology of Bedforms to Barforms within Tidally-Influenced Fluvial Zones (TIFZs): Lower Columbia River, OR/WA, USA, and the Lower Chehalis River, WA, USA"

**May 2018**  
**Quan Zhou**, "Understanding Late Cenozoic Western United States Mantle Dynamics and Surface Tectonics Using Forward-adjoint Data Assimilation Models"

# HONOR ROLL OF DONORS—JULY 2017-JUNE 2018

The following is a list of friends and alumni of the Department of Geology who have donated to the Department during the 2018 calendar year.

- |   |   |   |  |   |
|---|---|---|--|---|
| Mr. Franklin Andrews<br>Dr. Robert F. Babb and<br>Mrs. Laurie E. Hartline<br>Mr. Rodney J. Balazs and<br>Mrs. Jean C. Balazs<br>Ms. Debbie E. Baldwin and<br>Mr. Fred Olsen<br>Mrs. Laura S. Bales and<br>Mr. James E. Bales<br>Dr. William M. Benzel and<br>Mrs. Julia A. Benzel<br>Dr. Marion E. Bickford and<br>Mrs. Elizabeth E. Bickford<br>Dr. Daniel Blake<br>Dr. Charles J. Bopp and<br>Mrs. Amanda L. Bopp<br>Mr. Joseph E. Boudreaux and<br>Mrs. Martha B. Boudreaux<br>Mr. Michael W. Bourque and<br>Mrs. Marsha G. Bourque<br>Ms. Annette Brewster<br>Mr. Ross D. Brower and<br>Mrs. Carolyn J. Brower<br>Dr. Henry S. Brown and<br>Mrs. Wilda Eskew<br>Dr. Susan B. Buckley and<br>Dr. Glenn R. Buckley<br>Mr. Steven P. Burgess and<br>Mrs. Vicki L. Burgess<br>Dr. Thomas C. Buschbach<br>Dr. Jim W. Castle and Mrs. Elly<br>M. Castle<br>Mr. Jeffrey G. Catalano and<br>Mrs. Laura Catalano<br>Dr. Charles J. Chantell and<br>Mrs. Beverly G. Chantell<br>Dr. Lorence G. Collins<br>Mrs. Susan E. Collins and<br>Mr. Randolph M. Collins<br>Dr. Virginia A. Colten-Bradley<br>and Dr. Michael G. Bradley<br>Ms. Nancy M. Corrigan<br>Dr. Norbert E. Cygan and<br>Mrs. Royann Cygan<br>Mr. Maarten P. deVries and<br>Mrs. Joy A. deVries<br>Ms. Stephanie Drain<br>Ms. Sophie M. Dreiffuss | Dr. Mohamed T. El-Ashry and<br>Mrs. Patricia R. El-Ashry<br>Mr. Richard W. Ely<br>Dr. Frank R. Ettensohn and<br>Mrs. Beth Ettensohn<br>Mr. Kenneth T. Feldman and<br>Mrs. Gayle Gordon<br>Dr. Peter Fenner and<br>Dr. Kate M. Fenner<br>Mr. Lawrence L. Fieber and<br>Mrs. Sonia Soto<br>Mr. Gary M. Fleeger<br>Mr. Gary R. Foote<br>Mr. Robert E. Fox and<br>Mrs. Sue W. Fox<br>Dr. Linda P. Fulton<br>Mr. Barry R. Gager and<br>Mrs. Sandra L. Jacob<br>Mr. Luis A. Garcia<br>Mrs. Theresa C. Gierlowski and<br>Mr. Patrick C. Cummins<br>Dr. Richard A. Gilman and<br>Mrs. Carmen L. Gilman<br>Mr. John R. Garino and<br>Mrs. Carol E. Garino<br>Mr. Charles J. Gossett and<br>Mrs. Joan Gossett<br>Dr. James W. Granath<br>Dr. Stuart Grossman and<br>Mrs. Harriet S. Grossman<br>Dr. Albert L. Guber<br>Mr. Daniel W. Harms and<br>Mrs. Catherine L. Harms<br>Dr. Henry J. Harris and<br>Mrs. Joyce T. Harris<br>Dr. Joseph R. Hatch and<br>Mrs. Sandra C. Hatch<br>Mrs. Roberta Lynn Hay<br>Dr. Mark A. Helper and<br>Dr. Sharon Mosher<br>Dr. Lee M. Hirsch<br>Mr. Theodor W. Hopkins and<br>Mrs. Elizabeth D. Wilkins<br>Mr. Gary W. Horton and<br>Mrs. Sharon Horton<br>Ms. Ashley L. Howell<br>Dr. Stephen D. Hurst and<br>Mrs. Karen Hurst | Dr. Roscoe G. Jackson II<br>Mr. Steven F. Jamrisko and<br>Mrs. Jean M. Jamrisko<br>Mr. Bruce A. Johnson and<br>Mrs. Ann Johnson<br>Mr. Eric M. Johnson and<br>Mrs. Katherine J. Johnson<br>Mr. John M. Johnston and<br>Mrs. Dena M. Johnston<br>Dr. Suzanne E. Kay and<br>Mr. Robert W. Kay<br>Dr. Ronald A. Kern and<br>Mrs. Ruth Kern<br>Dr. John D. Kiefer and<br>Mrs. Martha M. Kiefer<br>Dr. Stephen H. Kirby<br>Dr. R. James Kirkpatrick and<br>Mrs. Carol A. Kirkpatrick<br>Mr. Michael B. Lampion<br>Dr. Robert H. Lander and<br>Dr. Linda M. Bonnell<br>Mr. Rik Lantz and Mrs. Ann C.<br>Logue<br>Ms. Nita C. Lathia<br>Dr. Stephen E. Laubach and<br>Mrs. Ann M. Laubach<br>Mrs. Kathryn L. Lee and<br>Mr. James G. Lee<br>Mr. Stephen C. Lee and<br>Mrs. Priscilla Lee<br>Dr. Margaret S. Leinen<br>Mr. Edwin D. Lindgren and<br>Mrs. Susanne M. Lindgren<br>Dr. Chao-Ning Liu and<br>Mrs. Kung-Jen Liu<br>Dr. Chao-Han Liu<br>Dr. Chao-Shiuan Liu and<br>Mrs. Ming-Sai Chien<br>Dr. Chao-Kai Liu and<br>Mrs. Bau-Dau Shen<br>Mrs. Susan Liu<br>Mrs. Jennifer C. Liu and<br>Mr. Brian Lowry<br>Ms. Joanne Liu<br>Mr. Peter R. Malecki and<br>Mrs. Amanda A. Sonneborn<br>Mr. John W. Marks and<br>Mrs. Charlene D. Marks | Prof. Stephen Marshak and<br>Mrs. Kathryn G. Marshak<br>Dr. Robert M. Mason and<br>Mrs. Penny A. Mason<br>Mrs. Joyce C. Mast<br>Dr. E. Donald McKay III<br>Ms. Elizabeth L. Meister<br>Ms. Linda A. Minor<br>Mr. Brian Donald Noel and<br>Mrs. Lynn Ellen Noel<br>Dr. Norman J. Page and<br>Mrs. Hilary Page<br>Mrs. Corinne Pearson and<br>Mr. Thomas E. Krisa<br>Dr. Russell A. Peppers<br>Mrs. Elaine L. Peppers<br>Dr. Brian L. Phillips and<br>Dr. Katherine E. Sugg<br>Mr. Bruce E. Phillips<br>Dr. Paul L. Plusquellec<br>Mrs. Betty J. Plusquellec<br>Ms. MaryAnn Read<br>Mr. David P. Ripley and<br>Mrs. Sarah P. Ripley<br>Mr. William F. Ripley and<br>Mrs. Altha Lee Ripley<br>Dr. Nancy M. Rodriguez<br>Mr. Mark D. Russell<br>Mrs. Samantha E. Rutkowske<br>and Mr. Michael Rutkowske<br>Mrs. Patricia A. Santogrossi<br>and Mr. Joe Delasko<br>Mr. Jay R. Scheevel and<br>Mrs. Mary B. Scheevel<br>Mr. Thomas J. Schickel<br>Dr. David C. Schuster<br>Dr. Frank W. Schwartz and<br>Mrs. Diane P. Schwartz<br>Mrs. Helen M. Sestak and<br>Mr. Thomas P. Cronin<br>Mrs. Erika L. Sieh and<br>Mr. David A. Sieh<br>Mrs. Crystal G. Simler<br>Mr. Roger A. Sippel and<br>Mrs. Martha K. Sippel<br>Mr. Eric P. Sprouls and<br>Mrs. Linda S. Sprouls<br>Mr. Carl K. Steffensen and<br>Mrs. Frances Steffensen | Mr. Edward G. Stermer and<br>Mrs. Brenda R. Stermer<br>Dr. Michael L. Sweet<br>and Mrs. Lily Sweet<br>Dr. Daniel A. Textoris and<br>Mrs. Linda K. Textoris<br>Mr. Jack C. Threet and<br>Mrs. Catherine I. Threet<br>Dr. John B. Tubb and<br>Mrs. Ann W. Tubb<br>Mr. Robert W. Von Rhee and<br>Mrs. Pamela N. Von Rhee<br>Dr. F. Mike Wahl<br>Dr. James G. Ward<br>Mr. Dederick C. Ward<br>Mr. Jack L. Wilber<br>Mr. Donald R. Williams and<br>Mrs. Elaine R. Witt<br>Mr. William W. Wilson<br>Mr. Lawrence Wu<br>Mrs. Melinda L. Ylagan and<br>Dr. Robert F. Ylagan<br>Mr. Thomas J. Zychinski and<br>Mrs. Shari B. Zychinski |
|---|---|---|--|---|

## Corporate Donors

- Chevron Corporation
- ConocoPhillips Corporation
- Dominion Foundation
- Estwing Manufacturing Company
- ExxonMobil Foundation
- Fidelity Charitable Gift Fund
- The GDL Foundation
- Jura Energy Consultants
- Mean Trail Trust
- Mobil Retiree Program
- Mor-Staffing, Inc.
- S. Drain Engineering of Illinois, LLC
- Shell Oil Company
- Shell Oil Company Foundation
- The Walt Disney Company Foundation
- Wells Fargo Advisors, LLC (Anonymous Donor)

## Stay Connected

To help us assure that you receive future issues of our newsletter and other communications from our department, Geology alumni are encouraged to update their contact information with the University of Illinois Alumni Association via email to [alumni@illinois.edu](mailto:alumni@illinois.edu) or if you prefer to call, 217-333-1471, 800-355-2586.



You can also update your information directly by going to [www.uialumninetwork.org](http://www.uialumninetwork.org) and clicking on the blue alumni sign-in here button. This is especially important as we look to communicate more electronically in the future.

## Send Us Your News

Send us your personal and professional updates by e-mailing us at [geology@illinois.edu](mailto:geology@illinois.edu) or by regular mail to:

Department of Geology  
University of Illinois at Urbana-Champaign  
3081 Natural History Building, MC-102  
1301 W. Green Street  
Urbana, IL 61801

Please include degree(s) earned and year, along with your current affiliation.

## 2017 Geology Faculty Publications

## ALISON ANDERS

Flynn, W. J., Nesbitt, S. W., **Anders, A. M.** & Garg, P. Mesoscale precipitation characteristics near the Western Ghats during the Indian Summer Monsoon as simulated by a high-resolution regional model, *Quarterly Journal of the Royal Meteorological Society*, 143, 3070-3084.

Grimley, D. A., **Anders, A. M.**, Bettis, E. A., Bates, B. L., Wang, J. J., Butler, S. K. & Huot, S. Using magnetic fly ash to identify post-settlement alluvium and its record of atmospheric pollution, central USA, *Anthropocene*, 17, 84-98.

## JIM BEST

Simmons, S. M., Parsons, D. R., **Best, J. L.**, Oberg, K. A., Czuba, J. A. & Keevil, G. M. An evaluation of the use of a multibeam echo-sounder for observations of suspended sediment, *Applied Acoustics*, 126, 81-90.

Sinha, S., Hardy, R. J., Blois, G., **Best, J. L.** & Sambrook Smith, G. H. A numerical investigation into the importance of bed permeability on determining flow structures over river dunes, *Water Resources Research*, 53 (4), 3067-3086.

Kim, T., Blois, G., **Best, J.** & Christensen, K. T. Experimental study of turbulent structure over permeable walls with a refractive-index-matching technique, *International Symposium on Turbulence and Shear Flow Phenomena*, TSFP10, Vol. 1.

Leyland, J., Hackney, C. R., Darby, S. E., Parsons, D. R., **Best, J. L.**, Nicholas, A. P., Aalto, R. & Lague, D. Extreme flood-driven fluvial bank erosion and sediment loads: direct process measurements using integrated Mobile Laser Scanning (MLS) and hydro-acoustic techniques, *Earth Surface Processes and Landforms*, 42 (2), 334-346.

Konsoer, K., Rhoads, B., **Best, J.**, Langendoen, E., Ursic, M., Abad, J. & Garcia, M. Length scales and statistical characteristics of outer bank roughness for large elongate meander bends: The influence of bank material properties, floodplain vegetation and flow inundation, *Earth Surface Processes and Landforms*, 42 (13), 2024-2037.

Bristow, N., Blois, G., **Best, J.** & Christensen, K. Refractive index matched PIV measurements of flow around interacting barchan dunes, *International Symposium on Turbulence and Shear Flow Phenomena*, TSFP10, Vol. 2.

Shugar, D. H., Clague, J. J., **Best, J. L.**, Schoof, C., Willis, M. J., Copland, L. & Roe, G. H. River piracy and drainage basin reorganization led by climate-driven glacier retreat, *Nature Geoscience*, 10 (5), 370-375

Carling, P. A., Perillo, M., **Best, J.** & Garcia, M. H. The bubble bursts for cavitation in natural rivers: laboratory experiments reveal minor role in bedrock erosion, *Earth Surface Processes and Landforms*, 42 (9), 1308-1316.

## DAN BLAKE

**Blake, D.B.** Paleozoic echinoderm hangovers: Waking up in the Triassic, *Geology*, 45 (7), e417-e417.

**Blake, D.B.**, Tintori, A., Kolar-Jurkoveš, T. New Triassic asteroidea (echinodermata) specimens and their evolutionary significance, *Rivista Italiana di Paleontologia e Stratigrafia*, 123 (2), 319-333.

**Blake, D.B.** Two new Carboniferous Asteroidea (Echinodermata) of the family Urasterellidae *Neues Jahrbuch für Geologie und Paläontologie - Abhandlungen*, 284 (1), 65-73.

**Blake, D.B.**, Donovan, S.K., Harper, D.A.T. A Silurian ophiuroid from the west of Ireland. *Irish Journal of Earth Sciences*, 35, 57-66.

## JESSICA CONROY

**Conroy, J. L.**, Thompson, D. M., Cobb, K. M., Noone, D., Rea, S. & Legrande, A. N. Spatiotemporal variability in the  $\delta^{18}\text{O}$ -salinity relationship of seawater across the tropical Pacific Ocean, *Paleoceanography*, 32 (5), 484-497.

Karamperidou, C., Jin, F. F. & **Conroy, J. L.** The importance of ENSO nonlinearities in tropical pacific response to external forcing, *Climate Dynamics*, 49 (7-8), 2695-2704.

**Conroy, J. L.**, Hudson, A. M., Overpeck, J. T., Liu, K. B., Wang, L. & Cole, J. E. The primacy of multidecadal to centennial variability over late-Holocene forced change of the Asian Monsoon on the southern Tibetan Plateau, *Earth and Planetary Science Letters*, 458, 337-348.

Thompson, D. M., **Conroy, J. L.**, Collins, A., Hlohowskyj, S. R., Overpeck, J. T., Riedinger-Whitmore, M., Cole, J. E., Bush, M. B., Whitney, H., Corley, T. L. & Kannan, M. S. Tropical Pacific climate variability over the last 6000 years as recorded in Bainbridge Crater Lake, Galápagos, *Paleoceanography*, 32 (8), 903-922.

## JENNIFER DRUHAN

Li, L., Maher, K., Navare-Sitchler, A., **Druhan, J.** & 21 others. Expanding the role of reactive transport models in critical zone processes, *Earth-Science Reviews*, 165, 280-301.

Huber, C., **Druhan, J. L.** & Fantle, M. S. Perspectives on geochemical proxies: The impact of model and parameter selection on the quantification of carbonate recrystallization rates, *Geochimica et Cosmochimica Acta*, 217, 171-192.

**Druhan, J. L.**, Fernandez, N., Wang, J., Dietrich, W. E. & Rempe, D. Seasonal shifts in the solute ion ratios of vadose zone rock moisture from the Eel River Critical Zone Observatory, *Acta Geochimica*, 36 (3), 385-388.

Liu, Y., Oster, J. L. & **Druhan, J. L.** The hydrologic record of karst systems: linking soil moisture to the carbon isotope signatures of soils above the Blue Spring cave system, *Acta Geochimica*, 36 (3), 392-395.

**Druhan, J. L.** & Maher, K. The influence of mixing on stable isotope ratios in porous media: A revised Rayleigh model, *Water Resources Research*, 53 (2), 1101-1124.

## BRUCE FOUKE

Botto, J., Fuchs, S. J., **Fouke, B. W.**, Clarens, A. F., Freiburg, J. T., Berger, P. M. & Werth, C. J. Effects of Mineral Surface Properties on Supercritical CO<sub>2</sub> Wettability in a Siliciclastic Reservoir, *Energy and Fuels*, 31 (5), 5275-5285.

Dong, Y., Sanford, R. A., Chang, Y. J., McInerney, M. J. & **Fouke, B. W.** Hematite Reduction Buffers Acid Generation and Enhances Nutrient Uptake by a Fermentative Iron Reducing Bacterium, *Orenia metallireducens* Strain Z6, *Environmental Science and Technology*, 51 (1), 232-242.

Motta, D., Keenan-Jones, D., Garcia, M. H. & **Fouke, B. W.** Hydraulic Evaluation of the Design and Operation of Ancient Rome's Anio Novus Aqueduct, *Archaeometry*, 59 (6), 1150-1174.

Singh, R., Sivaguru, M., Fried, G. A., **Fouke, B. W.**, Sanford, R. A., Carrera, M. & Werth, C. J. Real rock-microfluidic flow cell: A test bed for real-time in situ analysis of flow, transport, and reaction in a subsurface reactive transport environment, *Journal of Contaminant Hydrology*, 204, 28-39.

Palmer, C. L., Thomer, A. K., Baker, K. S., Wickert, K. M., Hendrix, C. L., Rodman, A., Sigler, S. & **Fouke, B. W.** Site-based data curation based on hot spring geobiology, *PLoS one*, 12 (3), e0172090.

## PATRICIA GREGG

Zhan, Y. & **Gregg, P. M.** Data assimilation strategies for volcano geodesy, *Journal of Volcanology and Geothermal Research*, 344, 13-25.

Zhan, Y., **Gregg, P. M.**, Chaussard, E. & Aoki, Y. Sequential assimilation of volcanic monitoring data to quantify eruption potential: Application to Kerinci Volcano, Sumatra, *Frontiers in Earth Science*, 5, 108.

## WILLIAM GUENTHNER

**Guenthner, W. R.**, Reiners, P. W., Drake, H. & Tillberg, M. Zircon, titanite, and apatite (U-Th)/He ages and age-eU correlations from the Fennoscandian Shield, southern Sweden, *Tectonics*, 36 (7), 1254-1274.

## FENG SHENG HU

Hudspith, V. A., Belcher, C. M., Barnes, J., Dash, C. B., Kelly, R. & **Hu, F. S.** Charcoal reflectance suggests heating duration and fuel moisture affected burn severity in four Alaskan tundra wildfires, *International Journal of Wildland Fire*, 26 (4), 306-316.

Young, A. M., Higuera, P. E., Duffy, P. A. & **Hu, F. S.** Climatic thresholds shape northern high-latitude fire regimes and imply vulnerability to future climate

change, *Ecography*, 40 (5), 606-617.

Vachula, R. S., Chipman, M. L. & **Hu, F. S.** Holocene climatic change in the Alaskan Arctic as inferred from oxygen-isotope and lake-sediment analyses at Wahoo Lake, *Holocene*, 27 (11), 1631-1644.

Schwörer, C., Gavin, D. G., Walker, I. R. & **Hu, F. S.** Holocene tree line changes in the Canadian Cordillera are controlled by climate and topography, *Journal of Biogeography*, 44 (5), 1148-1159.

Zhao, Y., Nelson, D. M., Clegg, B. F., An, C. B. & **Hu, F. S.** Isotopic analysis on nanogram quantities of carbon from dissolved insect cuticle: a method for paleoenvironmental inferences, *Rapid Communications in Mass Spectrometry*, 31 (21), 1825-1834.

Chipman, M. L. & **Hu, F. S.** Linkages Among Climate, Fire, and Thermoerosion in Alaskan Tundra Over the Past Three Millennia, *Journal of Geophysical Research, Biogeosciences*, 122 (12), 3362-3377.

## SUE KIEFFER

**Kieffer, S.W.** Researching the Earth and a Few of Its Neighbors, *Annual Review of Earth and Planetary Sciences*, 45, 1-29.

## LIJUN LIU

Zhou, Q. & **Liu, L.** A Hybrid Approach to Data Assimilation for Reconstructing the Evolution of Mantle Dynamics, *Geochemistry, Geophysics, Geosystems*, 18 (11), 3854-3868.

Chen, L., Capitanio, F. A., **Liu, L.** & Gerya, T. V. Crustal rheology controls on the Tibetan plateau formation during India-Asia convergence, *Nature Communications*, 8, 15992.

Hu, J., Faccenda, M. & **Liu, L.** Subduction-controlled mantle flow and seismic anisotropy in South America, *Earth and Planetary Science Letters*, 470, 13-24.

## CRAIG LUNDSTROM

**Lundstrom, C. C.** A self-consistent top-down model for differentiation in bimodal suites: application to the Sonju Lake Intrusion-Finland granite system (MN), *International Geology Review*, 59 (11), 1451-1470.

Turner, S., Kokfelt, T., Hoernle, K., Johansen, T. S., Hauff, F., **Lundstrom, C.**, van den Bogaard, P. & Klügel, A. Contrasting magmatic cannibalism forms evolved phonolithic magmas in the Canary Islands 2017, *Geology*, 45 (2), 147-150.

Bilenker, L. D., VanTongeren, J. A., **Lundstrom, C. C.** & Simon, A. C. Iron isotopic evolution during fractional crystallization of the uppermost Bushveld Complex layered mafic intrusion *Geochemistry, Geophysics, Geosystems*. 18 (3), 956-972.

Huang, F., Sørensen, E. V., Holm, P. M., Zhang, Z. F. & **Lundstrom, C. C.** U-series

disequilibria of trachyandesites from minor volcanic centers in the Central Andes, *Geochimica et Cosmochimica Acta*, 215, 92-104.

#### STEVE MARSHAK

Yang, X., Pavlis, G. L., Hamburger, M. W., **Marshak, S.**, Gilbert, H., Rupp, J., Larson, T. H., Chen, C. & Carpenter, N. S. Detailed crustal thickness variations beneath the Illinois Basin area: Implications for crustal evolution of the mid-continent, *Journal of Geophysical Research: Solid Earth*, 122 (8), 6323-6345.

**Marshak, S.**, Domrois, S., Abert, C., Larson, T., Pavlis, G., Hamburger, M., Yang, X., Gilbert, H. & Chen, C. The basement revealed: Tectonic insight from a digital elevation model of the Great Unconformity, USA cratonic platform, *Geology*, 45 (5), 391-394.

**Marshak, S.**, and Rauber, R., 2017, *Earth Science: The Earth, The Atmosphere, and Space*, W.W. Norton & Co., 847 p.

#### GARY PARKER

An, C., Fu, X., Wang, G. & **Parker, G.** Effect of grain sorting on gravel bed river evolution subject to cycled hydrographs: Bed load sheets and breakdown of the hydrograph boundary layer, *Journal of Geophysical Research: Earth Surface*, 122 (8), 1513-1533.

Miwa, H. & **Parker, G.** Effects of sand content on initial gravel motion in gravel-bed rivers, *Earth Surface Processes and Landforms*, 42 (9), 1355-1364.

Imran, J., Khan, S. M., Pirmez, C. & **Parker, G.** Froude scaling limitations in modeling of turbidity currents, *Environmental Fluid Mechanics*, 17 (1), 159-186.

An, C., Cui, Y., Fu, X. & **Parker, G.** Gravel-bed river evolution in earthquake-prone regions subject to cycled hydrographs and repeated sediment pulses, *Earth Surface Processes and Landforms*, 42 (14), 2426-2438.

Izumi, N., Yokokawa, M. & **Parker, G.** Incisional cyclic steps of permanent form in mixed bedrock-alluvial rivers, *Journal of Geophysical Research: Earth Surface*, 122 (1), 130-152.

Pornprommin, A., Izumi, N. & **Parker, G.** Initiation of Channel Head Bifurcation by Overland Flow, *Journal of Geophysical Research: Earth Surface*, 122 (12), 2348-2369.

Kwang, J. S. & **Parker, G.** Landscape evolution models using the stream power incision model show unrealistic behavior when m/n equals 0.5, *Earth Surface Dynamics*, 5 (4), 807-820.

Dhamotharan, S., Wood, A., Stefan, H. & **Parker, G.** Mechanics of bedload transport in gravel streams. Jan 1 2017 In : : proc. 19th IAHR Congress, (New Delhi, India: Feb. 1-7, 1981), 2, New Delhi, India, IAHR, 1981, Subject-A(d), Paper 11, p. 309-319 11 p.

Inoue, T., **Parker, G.** & Stark, C. P. Morphodynamics of a bedrock-alluvial meander bend that incises as it migrates outward: approximate solution of permanent form, *Earth Surface Processes and Landforms*, 42 (9), 1342-1354.

Iwasaki, T., Nelson, J., Shimizu, Y. & **Parker, G.** Numerical simulation of large-scale bed load particle tracer advection-dispersion in rivers with free bars, *Journal of Geophysical Research: Earth Surface*, 122, (4), 847-874.

Ma, H., Nittrouer, J. A., Naito, K., Fu, X., Zhang, Y., Moodie, A. J., Wang, Y., Wu, B. & **Parker, G.** The exceptional sediment load of fine-grained dispersal systems: Example of the Yellow River, China, *Science Advances*, 3 (5), e1603114.

Johannesson, H. & **Parker, G.** Velocity redistribution in meandering rivers, *Journal of Hydraulic Engineering, (ASCE)*, 115 (8) 1019-1039.

#### ROB SANFORD

Michelson, K., **Sanford, R.A.**, Valocchi, A.J., Werth, C.J. Nanowires of Geobacter sulfurreducens require redox cofactors to reduce metals in pore spaces Too Small for Cell Passage, *Environmental Science and Technology*, 51 (20), 11660-11668.

Dong, Y., **Sanford, R.A.**, Chang, Y.-J., McInerney, M.J., Fouke, B.W. Hematite reduction buffers acid generation and enhances nutrient uptake by a fermentative iron reducing bacterium, *orenia metallireducens* strain Z6, *Environmental Science and Technology*, 51 (1), 232-242.

Singh, R., Sivaguru, M., Fried, G.A., Fouke, B.W., **Sanford, R.A.**, Carrera, M., Werth, C.J. Real rock-microfluidic flow cell: A test bed for real-time in situ analysis of flow, transport, and reaction in a subsurface reactive transport environment, *Journal of Contaminant Hydrology*, 204, 28-39.

Hallin, S., Philippot, L., Löffler, F.E., **Sanford, R. A.**, Jones, C. M., Genomics and ecology of novel N<sub>2</sub>O-reducing microorganisms, *Trends Microbiol*, 26: 1-13.

#### XIAODONG SONG

Ye, Z., Li, J., Gao, R., **Song, X.**, Li, Q., Li, Y., Xu, X., Huang, X., Xiong, X. & Li, W. Crustal and uppermost mantle structure across the Tibet-Qinling transition zone in NE Tibet: Implications for material extrusion beneath the Tibetan plateau, *Geophysical Research Letters*, 44 (20), 10,316-10,323.

Li, J., **Song, X.**, Zhu, L. & Deng, Y. Joint inversion of surface wave dispersions and receiver functions with P velocity constraints: Application to southeastern Tibet, *Journal of Geophysical Research: Solid Earth*, 122 (9), 7291-7310.

Li, X., **Song, X.** & Li, J. Pn tomography of South China Sea, Taiwan Island, Philippine archipelago, and adjacent regions, *Journal of Geophysical Research: Solid Earth*, 122 (2), 1350-1366.

## Faculty

Stephen Altaner (Associate Professor)  
Alison Anders (Associate Professor)  
Jay Bass (Ralph E. Grim Professor)  
Jim Best (Jack and Richard Threet Professor)  
Jessica Conroy (Assistant Professor)  
Jennifer Druhan (Assistant Professor)  
Bruce Fouke (Professor)  
Patricia Gregg (Assistant Professor)  
William Guenther (Assistant Professor)  
Feng Sheng Hu (Ralph E. Grim Professor of Geology and Dean, LAS)  
Tom Johnson (Professor and Head)  
Lijun Liu (Associate Professor)  
Craig Lundstrom (Professor)  
Steve Marshak (Professor & Director of the School of Earth, Society & Environment)  
Gary Parker (W. Hilton Johnson Professor)  
Xiaodong Song (Professor)  
Gillen Wood (Professor)  
Wendy Yang (Assistant Professor)

## Specialized Faculty

Max Christie (Lecturer)  
Ann Long (Teaching Lab Specialist)  
J. Cory Pettijohn (Research Assistant Professor)  
Rob Sanford (Research Associate Professor)  
Michael Stewart (Clinical Associate Professor)  
Jonathan Tomkin (Research Associate Professor & Associate Director, School of Earth, Society, and Environment)

## Affiliate Faculty

Stanley Ambrose (Professor, Anthropology)  
Marcelo Garcia (Seiss Professor, Civil and Environmental Engineering)  
Scott Olsen (Associate Professor, Civil and Environmental Engineering)  
Surangi Punyasena (Associate Professor, Plant Biology)  
Bruce Rhoads (Professor, Geography)

## Adjunct Faculty

Ercan Alp	David Grimley	Andrew Phillips
Kurtis Burmeister	Sam Heads	George Roadcap
Todd Cole	Dennis Kolata	William Shilts
Brandon Curry	Hannes E. Leetaru	Scott Wilkerson

## Emeritus Faculty

Thomas F. Anderson	Wang-Ping Chen	Susan Kieffer
Craig Bethke	Donald L. Graf	Tommy Phillips
Daniel B. Blake	Ralph Langenheim	George Klein (deceased)
Chu-Yung Chen	Albert Nieto	

## Department Support Staff

Rachel Davidson (Office Support Associate)  
Lana Holben (Assistant to Head)

Wang, T., **Song, X.**, Support for equatorial anisotropy of Earth's inner-inner core from seismic interferometry at low latitudes, *Physics of the Earth and Planetary Interiors*, 276, 247-257.

Wang Q., **Song, X.**, Ren, J. Y., Ambient noise surface wave tomography of marginal seas in east Asia, *Earth and Planetary Physics*, 1, 13-25.

#### JONATHAN TOMKIN

Brocke, R., Brett, C.E., Ellwood, B.B., Hartkopf-Fröder, C., Riegel, W., Schindler, E., **Tomkin, J.H.** Comparative palynofacies, magnetic susceptibility and cyclicity of the Middle Devonian Müllertchen Section (Eifel area, Germany), *Palaeobiodiversity and Palaeoenvironments*, 97 (3), 449-467.

#### GILLEN WOOD

**Wood, G.D.** Frankenstein, the Baroness, and the climate refugees of 1816, *Wordsworth Circle*, 48 (1), 3-6.

**Wood, G.D.** Afterword: Interglacial Victorians, *Victorian Sustainability in Literature and Culture*, 220-225.

#### WENDY YANG

**Yang, W. H.**, Ryals, R. A., Cusack, D. F. & Silver, W. L. Cross-biome assessment of gross soil nitrogen cycling in California ecosystems, *Soil Biology and Biochemistry*, 107, 1435-1453.

**Yang, W. H.**, McNicol, G., Teh, Y. A., Estera-Molina, K., Wood, T. E. & Silver, W. L. Evaluating the Classical Versus an Emerging Conceptual Model of Peatland Methane Dynamics, *Global Biogeochemical Cycles*, 31 (9), 1435-1453.

**Yang, W. H.**, McNicol, G., Teh, Y.A., Estera, K, Wood, TE, Silver, WL. (2017) Evaluating the classical versus an emerging conceptual model of peatland methane dynamics, *Global Biogeochemical Cycles*, 31, 1435-1453.

## Department of Geology

University of Illinois at Urbana-Champaign  
3081 Natural History Building, MC-102  
1301 W. Green Street  
Urbana, IL 61801

Non-Profit Organization  
U.S. Postage  
PAID  
Permit No. 453  
Champaign, IL

## 2017-2018 COLLOQUIUM SPEAKERS

### August 31

"Life Makes Rock: A newly forged geobiological perspective on biomineralization"

Bruce Fouke, Dept. of Geology, UIUC

### September 7

Buckley Lecture in Environmental Geology

"Water storage in the earth's critical zone: the hidden role of rock moisture in regulating ecological and geochemical processes"

Daniella Rempe, University of Texas at Austin

### September 14

"From Hugo Benioff to aLIGO: strains, rotations, and other new developments in seismology"

Chuck Langston, University of Memphis - Center for Earthquake Research and Information

### September 21

"Resolution of the Late Paleozoic Ice Age in time and space: Insights from eastern Australia and North America"

Chris Fielding, University of Nebraska-Lincoln

### September 28

Ralph E. Grim Lecture

"Urinary Stones: Multiple paths to a common problem"

John Lieske, Mayo Clinic

### October 5

"Pacific Ocean influences on glaciation at the leading edge of North America, Olympic Peninsula, Washington"

Glenn Thackray, Idaho State University

### October 12

Richard L. Hay Lecture

"Current state of eruption forecasting at the Alaska Volcano Observatory, and where we can go from here"

Michelle Coombs, Alaska Volcano Observatory

### October 19

"Active crustal foundering in the Northern Volcanic Zone of the Andean Arc"

Mauricio Ibanez-Mejia, University of Rochester

### October 26

Ralph E. Grim Lecture

"Crustal elasticity and the path from red and blue to composition and structure"

Sarah Brownlee, Wayne State University

### November 2

Kirkpatrick Lecture

"Toward a conceptual model relating subsurface biogeochemical landscapes to water flow paths in hills"

Sue Brantley, Penn State University

### November 3

Department of Geology 2017 Alumni Achievement Award Presentation

"NMR Spectroscopy and computational molecular modeling of mineral surfaces and interlayer galleries: Structure, dynamics and energetics"

Jim Kirkpatrick (Ph.D., Geology, '72), Dean, College of Natural Sciences, Michigan State University

### November 9

Phillips Lecture

"Discovering megadroughts from long tree-ring records: Climate histories and societal impacts"

Ed Cook, Columbia University

### November 16

"Tropical climate change and coral reef ecosystems: learning from the past and predicting the future"

Diane Thompson, Boston University

### November 30

"Geothermal exchange: New research on UIUC campus"

Andrew Stumpf, Illinois State Geological Survey

### December 7

"Subduction zones dynamics and structure from coupled geodynamic and seismological modeling"

Manuele Faccenda, University of Padov

### January 25

"Land Snails as paleoenvironmental and paleoecological proxies"

Yurena Yanes, University of Cincinnati

### February 1

Buckley Lecture in Environmental Geology

"Flowing ice and river gravels: interactions between climate, glaciers, and fluvial geomorphology"

Andrew Wickert, University of Minnesota

### February 8

"S, Os and Cu isotope systematics of sheet- and conduit-style Ni, Cu, PGE- Sulfide mineralization in the midcontinent rift system"

Ed Ripley, Indiana University

### February 15

Ralph E. Grim Lecture

"Cenozoic evolution of climate, topography, and tectonics in the Patagonian Andes"

Mark Brandon, Yale University

### February 22

"Observational and modeling investigations into the drivers and impacts of coastal geomorphic change"

Ethan Theuerkauf, Illinois State Geological Survey

### March 1

"Advances of seismic imaging in exploration geophysics"

Hua-wei Zhou, University of Houston

### March 8

"Caught between a fossil and a hard place: What can biomechanical data tell us about morphological evolution in deep time?"

Philip Anderson, Dept. of Animal Biology, UIUC

### March 15

Buckley Lecture in Environmental Geology

"Soil carbon storage and stability across the landscape: How do we improve our ability to predict soil dynamics at the regional scale?"

Corey Lawrence, United States Geological Survey

### March 29

"Ion adsorption phenomena into the hydrothermal regime"

Mike Machesky, IL State Water Survey: Aqueous Geochemistry

### April 5

Kirkpatrick Lecture

"Magmanomic bull and bear markets at Kilauea Volcano, Hawaii"

Mike Poland, Cascade Volcano Observatory

### April 12

"New views of silicic magmatic systems: Granite (and rhyolite?) origins as low temperature mush"

Craig Lundstrom, Dept of Geology, UIUC

### April 16

Mineralogical Society of America Distinguished Lecture

"From Ores to Eruptions - rethinking the architecture of magmatic systems"

Jon Blundy, University of Bristol, UK

### April 19

"The Greenland Ice Sheet: Will it stay or will it go?"

Andy Aschwanden, University of Alaska Fairbanks

### April 26

Ralph E. Grim Lecture

"Two thermochronological views of crustal evolution: tectonic and erosional feedbacks in the Himalayan corners, and a Proterozoic enigma"

Peter Zeitler, Lehigh University