

GEOLOGY

Geology along the Wild Atlantic Way: 2019 spring field course returns to western Ireland

The 2019 Geology 415/515 Field Class took place in County Clare, western Ireland, from May 15-26 and was led by **Professor Jim Best** and **Dr. Max Christie**, who were accompanied by **Linda Angeloni** and adjunct professor **Dr. Drew Phillips** from the Illinois State Geological Survey.

This is the fourth time the class has been held in this region of internationally renowned geology, with the class visiting many coastal outcrops along the Atlantic coast of County Clare. This unique field area allowed the group to examine the sedimentology and evolution of the Carboniferous Shannon sedimentary basin. These outcrops display a range of sedimentary environments, from carbonate platform to deep basinal black shales, and from deep sea turbidites to fluvio-deltaic successions, as well as a wide array of synsedimentary and tectonic deformation features.

This year, the Illinois group again teamed up on a joint trip with the University of Nebraska at Lincoln, led by Professor Chris Fielding—who recently spent part of his sabbatical with the Department of Geology during 2018-2019. Chris and Jim have been collaborating on a range of topics, including a recent 2019 paper in *Sedimentology* that arose from the 2016 County Clare field class and involved a number of Illinois and Nebraska graduate students and postdocs. The 2019 field class spent the first five days introducing students to the wide range of sediments and depositional environments represented by these rocks, allowing an overview of the basin history, including its formation, fill and later deformation. All of these events could be placed in the context of the evolution of northwest Europe and North America during the Carboniferous and the use of such exposures in assessing issues such as subsurface reservoir geometry and quality. This year, the group also visited a new local core storage facility, established by University College Dublin and a consortium of hydrocarbon companies; this allowed a superb opportunity to view sedimentary cores through the range of deepwater environments the students had examined in outcrop only days before. After this initial period, the group split into smaller teams to conduct research projects on the nature of one of the upper sedimentary “cyclothem” (a term coined by Professor Harold Wanless in the 1930s)



GEOL 415/515 students sketch sedimentary structures in the world-class outcrops of County Clare, Ireland.

and its deformational horizons, and to map sediments along one part of the foreshore near the town of Doonbeg.

The field class included group seminars at the end of the course and the size of the class fostered collaboration between the two university groups. The trip was fortunate to take advantage of some good Irish spring weather and stayed in the seaside town of Kilkee, where evening meals allowed sampling of the local culture. The trip was partially supported by a donation from Shell. Although the Shell funds will cease with the 2019-2020 academic year, a very generous alumnus has provided funds to keep the spring field course affordable for a few years, and the department is working to build up endowment funds that will support it in the long run. This class to western Eire, and the 415/515 class in general provide a unique geological and cultural experience for our students, allowing the best geological training in the field, permitting new techniques and team-based skills to be learned, and encouraging students to think independently and express their ideas clearly to a group of their peers. Continuing to offer the 415/515 course and the unique education it provides is a departmental priority for the future. ✨



Letter from the Head

One of the great pleasures of serving as department head is the rewarding interactions I have with the great people of the department—those on campus and those in our alumni network around the world. People sometimes ask if being head for eight years has been difficult. I always reply that I have continued this long only because we have a great crew in the department; the drama I hear about in many other departments would have worn me down long ago! I feel very fortunate to work with wonderful people who are not just excellent at their jobs but also caring and effective working as a group.

In the history of this department there were notable faculty feuds that, fortunately, are now colorful stories with little similarity to today's regime. As you saw in last year's newsletter, the faculty have been "on a roll" with their accomplishments and awards (more to report this year!).

But these outside accomplishments don't come with outside egos or abrasive personalities. For example, the Natural History Building (NHB) project was a long and complex process full of potential conflicts, but we navigated it reasonably well and the end product is excellent. When I need advice on departmental decisions, I know I can walk along "geology row" to find several open doors with faculty ready to give thoughtful input. The geology faculty are all outstanding people and the resulting trust has enabled us to think creatively and make rational, thoughtful decisions over the past several years.

But, of course, the faculty would get little done without the efforts of our excellent staff. Many of you know that Lana Holben is the central person that keeps the department humming. She covers a very long list of administrative tasks, serves as my assistant, organizes the School of Earth, Society & Environment (SESE) graduation ceremony, does course/room scheduling, etc., etc. Lana is extraordinarily dedicated, proactive, and effective. All with a smile. The students call her "Geo Mom." Need I say more? The department is also supported by the excellent staff of the SESE Business

Office, directed by the legendary Scott Morris until his recent retirement.

The most colorful and dynamic people in the department are the students, of course. I enjoy getting to know many of them, and they are all very talented in varying ways (I am convinced one current student ought to be a standup comic.). It is often said that faculty learn a lot from students, and this is absolutely true. Their fresh perspectives and inquiring minds keep things lively around here. It is inspiring to watch them grow in their time here and then see their careers unfold afterward.

Interacting with the wonderful people of the geology alumni network is one of the highlights of my department head role. You may, or may not, realize how special the bonds are between geology alumni. Many other departments are very large, don't have such a unique identity, and don't have intense shared experiences such as field camp and course field trips. Whenever we get geology alumni together, the stories start to fly, and, importantly, they cross multiple generations. It's moving to hear about your career experiences and how this institution got you started and, quite likely, changed your life. It's immensely satisfying to see alumni of all ages making an impact on the world. That's the payback for me—the fruits of our collective hard work becoming evident, years down the road.

On that note, I have a practical request aimed mostly at graduates of the past 10 years: Please help us follow your career. This serves multiple purposes. We need evidence to show that our programs lead to great careers. This helps us recruit new students and advise current ones, and it also fulfills a university requirement that we conduct "outcomes assessments" of our programs. Furthermore, the alumni network is an important feedback loop; we need to hear from you about changes we should make (e.g., emphasize GIS skills or Python coding) as the geological profession evolves. Finally, we want to match your company's employment opportunities with our talented graduating students. So please join our LinkedIn group, "UIUC Geology Alumni," keep your contact information up to date with us, and send updates to geology@illinois.edu whenever you have news to share.

All the best,
Tom Johnson



Department of Geology students, faculty, and staff pose for photo, May 2, 2019.

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2018 Alumni Achievement Award: Dr. Norb Cygan



In October, 2018, the department presented its Alumni Achievement Award to **Dr. Norbert E. Cygan** (BS, '54; PhD, '62). Norb and his wife, Royann, enjoyed a day of reconnecting with the department, and Norb presented a talk, "The multi-million-pound uranium deposit at Panna Maria, TX and my 65-year journey in Geology."

Norb was recognized for his contributions to industry, academia, and public education and outreach. After earning his bachelor's degree, he served in the Korean War, pursued graduate work at Ohio State, and taught at Ohio Wesleyan before returning to U of I to pursue his doctoral degree. Though department head George White suggested an academic career, Norb instead chose Chevron, where he worked for nearly 30 years, first as a micropaleontologist and exploration geologist, then in uranium and other minerals. He served as manager of Chevron's Domestic Mineral Division before moving to overseas oil exploration in Africa, Asia, and the USSR. His teaching career revived as he worked in corporate geologic training and taught at the University of Houston. He took early retirement in 1991 to care for his wife, Carol Dunnivant Cygan (BS, '56, Education), who lost a battle with cancer in 1992.

Norb's post-Chevron years included a remarkable degree of engagement with the profession and the community that simply does not fit the word "retirement." Within the American Association of Petroleum Geologists (AAPG), he served on its Science Teachers Awards Committee, chaired its AAPG Convention Teachers Day Program, and chaired its Youth Activities Committee. He has been a central figure in the development of Dinosaur Ridge (www.dinoridge.org), the dinosaur fossil and trackway site just west of Denver. The nonprofit manages and preserves the site, trains volunteer docents, hosts over 200 schools and tens of thousands of visitors each year, and runs a variety of other programs. At Colorado School of Mines and University of Denver, Norb has taught teachers' summer classes and continuing education classes. He also served on the education committee at the American Geological Institute, and has served on the alumni board of this department.

Norb has earned many awards including: Fellow of the Geological Society of America (GSA); AAPG Public Service Award; AAPG Energy Minerals Division Distinguished Service Award; AAPG Distinguished Service Award; Rocky Mountain Association of Geologists Public Service Award; and Dinosaur Ridge Lifetime Achievement and Special Distinguished Service Awards. Norb has been extremely energetic and generous in his many activities, and the profession has been lucky to benefit from his passion for geoscience, education, and bringing geoscience to the public. ✨

MEET GRADUATE STUDENT JULIA CISNEROS

Julia Cisneros, a doctoral student working with Jim Best, the Threet Professor of Geology, is an award-winning researcher and a leader among the graduate students. We interviewed her recently about her history and her work.

What current project are you working on?

My research focuses on understanding the morphology and dynamics of dunes in alluvial channels. In my earlier research, I've used snapshot and time series bathymetric data to quantify and understand the shape of dunes in these rivers and how they change under different flow conditions. Currently, I am conducting laboratory flume experiments at the Ven Te Chow Hydrosystems Laboratory on campus, where my main focus is understanding the morphology of bedforms generated in very fine sands and coarse silts, where there is currently a lack of quantitative information. I do this by utilizing acoustic methods to measure three-dimensional vectors in flow velocity at a point and along depth profiles, measuring bed longitudinal profiles, and gathering suspended sediment data.



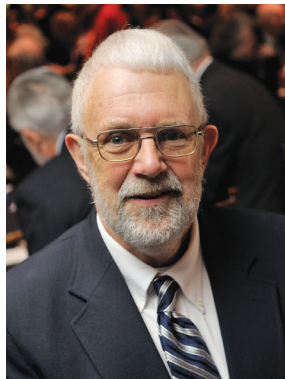
Have you had a favorite moment out in the field over the last few years?

One of my favorite moments in the field was my first time on the Amazon River, near Manaus, Brazil. I remember being very nervous about meeting my Brazilian colleagues (I only knew them from email), and having to live on a boat and sleep in hammocks for two weeks. All of that anxiety went away the moment I arrived, and I had the best time collaborating and conducting field surveys. I realized during that field season how important it is to get out in the field and see your study area in person and equally how important working face-to-face with collaborators was. We got more done in two weeks than we had in two months!

What have you found most fulfilling in your experience at the U of I so far?

By far, the most fulfilling experience I've had was the opportunity to design, organize, and lead the Geoscience Camp for Girls this summer with geography graduate student Aida Guhlincozzi. Each department in SESE supported our efforts and offered materials and resources, and the Department of Geology offered support from Shell Oil K-12 education funds. Seeing those girls (aged 11-13) walking through the halls of NHB and utilizing our labs gave me so much motivation and revitalized my commitment to diversity and inclusion in the geosciences. I realize that without the people who actively recruit and mentor students who are underrepresented in geosciences, I wouldn't be where I am today. As they did for me, I work to further that mission and ensure academic spaces are spaces where all people are welcome and valued. ✨

DONOR PROFILE: ROSCOE JACKSON II



Roscoe Jackson (MS, '73; PhD, '75) returns to the University of Illinois campus at least twice each year to connect with geology faculty, students, and staff. He says some of the best years of his life were spent at Illinois as a graduate student. It is where he learned how to conduct scientific research and where he received funding from people who didn't even know him. In the summer of 1972, Roscoe received \$300 from the Shell Oil Foundation.

His appreciation for these critically important funds, and others, is why he gives back to the Department of Geology. Through his generosity, numerous graduate students have received support to conduct research and attend national conferences.

He also supported the Natural History Building project through his gift to create the Roscoe Jackson Microscope Laboratory, home to the department's petrographic scopes and teaching collections.

When he was a graduate student at Illinois, Roscoe was impressed by the extremely talented graduate and undergraduate students in geology, and this still rings true today. Whether he is having lunch with graduate students, attending a seminar, or talking with faculty, Roscoe enjoys learning about current research.

In 2012, Roscoe received the LAS Dean's Quadrangle Award, which is bestowed annually to honor extraordinary friends of the college. "Roscoe G. Jackson II has remained a strong supporter of graduate students in geology, as well as the School of Earth, Society, & Environment. His generosity enabled Illinois to purchase equipment for the study of river systems, and he created an endowment that has enabled graduate students to attend conferences, conduct field studies, and cover equipment costs." (las.illinois.edu/alumni/awards/quadrangle) ✨

CROSSING THE WHITE RIBBON: THE RV WABASH AND LAKE MICHIGAN COASTAL SCIENCE

Coastal erosion along the Lake Michigan shoreline is a big, important issue, and a partnership between the Illinois State Geological Survey and the Department of Geology is making important contributions. The department's research vessel, the RV Wabash, has been substantially enhanced and deployed by the ISGS as part of the Lake Michigan Coastal Science Initiative. The RV Wabash is equipped to survey the lake bottom in fine detail, using single beam, multibeam, and parametric echo sounding. It also has GPS, radar, and sonar systems, and several computers to aid in data collection, data representation, and navigation. The 27-foot work skiff's special design, with a very shallow draft, means that it can carry out lake-bottom mapping in shallow water. This allows researchers to study the "White Ribbon," the zone of shallow water, often with breaking waves, where the water is too shallow for many research vessels. This dynamic zone, where rapid change occurs, is a critical part of the studies.

Steve Brown, chief scientist at the ISGS, leads the project that also involves geology adjunct professor Dr. Drew Phillips. Steve said, "The technology allows us to quantify lake-bottom change at resolutions that can be linked to short- and long-term wave, current, and wind patterns. This is particularly important at a time when Lake Michigan is approaching record-high levels and the state is considering additional shore protection strategies. In addition, we've mapped two shipwrecks and have aided in the analysis of erosion around a public water-supply pipeline that extends on the lake bottom into Lake Michigan. I also have to add that living the life of a Lake Michigan mariner is pretty good duty!" The RV Wabash, acquired through a very generous donation from one of the department's most engaged alumni, has been in use since 2009. Professor Jim Best, the Jack C. Threet and Richard L. Threet Professor in Sedimentary Geology, has deployed the vessel within a host of collaborative projects at a wide range of locations, including the local Wabash River, the Chicago and Mississippi rivers, and Yellowstone Lake. "The RV Wabash provides an essential part of our field capability," stated

Jim, "enabling us to both deploy state-of-the-art survey technology, and respond to flood events as they happen. The vessel is allowing a range of fundamental research as well as direct applications linked to issues of local, national, and international concern. None of this would have been possible without the incredible support from our alumni." ✨



The RV Wabash motors out from the harbor for another day imaging lake-bottom sediments in the coastal waters of Lake Michigan.

Right: View of the cabin, which contains state-of-the-art instruments, computers, and display screens.



More faculty and student awards!

In last year's newsletter, we saluted the many awards garnered by geology faculty and students. This year, the incredible string of successes continued with two more NSF CAREER awards going to department faculty. Professor Jessica Conroy's project studies ocean-atmosphere interactions through the lens of stable water isotopologues. This research will use new measurements of stable isotope ratios of O and H in seawater, precipitation, and water vapor to advance understanding of the hydrologic cycle in the tropical Pacific, and how it is archived in sedimentary records over periods of years to centuries. Professor Willy Guenther's CAREER project will use his advanced thermochronology

methods to investigate the timing and extent of erosion that created the Great Unconformity (see faculty profile below).

The flood of student awards continued as well. Graduate student Naomi Wasserman received a Fulbright Fellowship to support her work on antimony in the environment, with a focus on the chemistry of the antimony-rich hot springs of New Zealand (nice choice of field area, Naomi!). Incoming graduate student Jon Golla has received a prestigious NSF Graduate Fellowship. ✨

Faculty spotlight: Willy Guenther

Professor William "Willy" Guenther, who completed his third year as an assistant professor last spring, brings a completely new technique to the department: thermochronology. This new and powerful area of research lies within the field of geochronology, and it focuses on the temperature histories of rocks. Guenther is an emerging leader, pushing the envelope of this new method, and he describes his group's work in this way: "My research is focused on advancing thermochronology methods at a fundamental level, and then using these advances to expand the range of thermal history-related problems and questions that Earth scientists can address. Many researchers in the field of tectonics use these tools, but my group is unique in that we are actively engaged in both the basic and applied aspects of the science of thermochronology."

Guenther's group measures accumulations of helium produced by radioactive decay of uranium and thorium. Because helium is a noble gas, it readily diffuses out of a crystal's lattice at high temperatures, yet it is retained at the lower temperatures found in the Earth's middle to upper crust (-220 °C and lower). In the simplest case, an age date based on helium accumulation within a given mineral grain indicates the last time that mineral was above its "closure temperature." Once the mineral cools below that temperature, the system is closed and the clock starts ticking. But Guenther's work takes this method much further by coaxing from a mineral grain information about its "thermal history," the temperature as a function of time. This requires three types of work: Measurements of helium released as crystals are systematically heated, experiments studying helium diffusion, and computer models of helium diffusion out of complex crystals that, in essence, contain multiple crystal domains with varying closure temperatures. Zircon crystals, with their high uranium contents and resistance to alteration, are the primary target. The method provides a powerful means of determining the timing and rates of tectonic uplift, erosional unroofing, and/or burial.

In addition to working at the forefront of developing this new method, Guenther's group applies helium thermochronology towards solving specific geologic problems. They have begun a study of the long-term evolution of mountain belts, focusing on a portion of the Cordillera in Idaho and Montana. This project is testing the



Guenther and his son

hypothesis that major differences in shortening style within the Cordillera result from variations in the types and strengths of rocks present prior to the beginning of mountain building. An emerging area of long-term research for the group focuses on thermal histories of rocks at the Great Unconformity—the top surface of Precambrian rocks that reflects a global erosional event related to profound changes in the Earth system. Guenther explains: "My research is investigating the potential confluence of the timing of this erosion with the breakup of the supercontinent Rodinia, Snowball Earth glaciations, and the Cambrian explosion of life. The recent method advancements I have pioneered offer the ability to constrain the erosion history

of crystalline basement directly below the great unconformity. The proof-of-concept for this work has been published (*DeLucia et al., 2017. Thermochronology links denudation of the Great Unconformity surface to the supercontinent cycle and snowball Earth, Geology*, v. 46: pp. 167-170) and I recently received an National Science Foundation (NSF) CAREER grant to pursue this work in the future!" ✨

Student Profile: Robert Hill



Robert Hill, one of our graduating seniors this past May, took time recently to reflect on his career as a student at Illinois and the special home he found in the Department of Geology. Like many geology majors, he started in another department, but was drawn in by the interesting science of geology and the close-knit community in the department. He says, “I don’t know where I’d be if I hadn’t discovered geology. The summer after my sophomore year,

I was planning to get an environmentally focused chemistry degree, so I did a summer research project in environmental chemistry at Penn State. During that summer, I got to know a geology grad student and went on a sampling trip. It was interesting, so I took my first geology class the next semester back at Illinois. Soon, I found myself majoring in geology and taking a minor in chemistry.” Robert recalls that the field trip for his Geology 208 class was quite challenging and yet, it attracted him to the tight-knit geology clan. “We camped in below-freezing temperatures. It snowed at night; not a pleasant experience! So why was this torturous trip my favorite? Because I made lifelong friends. The class was probably my most difficult geology course, but my classmates and I worked as a team and they helped me tremendously. Yes, we were freezing. But we

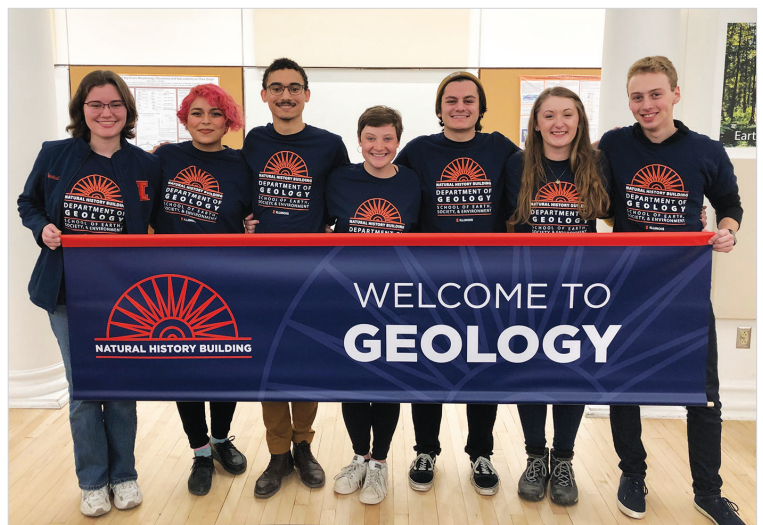
were doing it together. We camped, sat around a campfire, and had a great time. Professor Stewart is a phenomenal professor; I don’t think I would’ve done well in that class if it wasn’t for the community he built.”

As his interest in geology grew, Robert asked about research opportunities and found a nice fit doing a senior thesis in environmental geochemistry. He was mentored by graduate student Naomi Wasserman and Professor Tom Johnson, and focused on evaluating if the stable isotope ratios of chromium or selenium can be used as tracers of coal ash contamination migrating in the environment. Robert commented on the challenge of completing a senior thesis during a busy final semester: “Between all my activities (final papers and projects; final exam studying; one job as a chemistry merit TA and one as a lab assistant; career searching; and graduation preparation) finding time to read journal articles and understand the nitty gritty of my research was difficult. But somehow I got it all done.” Robert has a tip for students preparing to write a senior thesis: “Get the introduction done months ahead of time. The moment you have a grasp on the project, write the introduction section. The hardest part is starting the thing, so why not get the intro out of the way long before the big writing crunch at the end?”

Immediately after graduation, Robert started work at SCST, an environmental consulting firm in the Chicago area, with Rik Lantz (BS, ’82) as his boss. After a year or two working in industry, he plans to earn a graduate degree in environmental geochemistry. ✨

MEET THE GEOLOGY AMBASSADORS!

Many geology students are passionate about their major and eager to tell others about it. On the other hand, most of the 37,000+ undergraduate students on this campus don’t know much about geology and its career opportunities. This presents a problem for the department: How can we reach out to those hordes of students and find the geology majors of the future? This is a major role for the Geology Ambassadors! About eight undergraduate students are selected each year to brainstorm ways of getting our word out on campus, and to represent the department in many ways. The ambassadors are tapped to meet with prospective students visiting campus, reach out to admitted students to make sure they choose Illinois Geology, meet with visiting alumni, take part in events like Quad Day and Engineering Open House, and otherwise serve as the public face of our bachelor’s program. ✨



The 2018 Geology Ambassadors

Jay Bass retires from teaching



After 35 years on the Department of Geology faculty, **Professor Jay Bass** retired from his teaching role as of January 1, 2019, and is now Professor Emeritus. Jay continues his vigorous and internationally renowned research program in mineral physics, with continued National Science Foundation funding and two graduate students. He is arguably the

world's leader in the application of Brillouin spectroscopy to measure the elastic properties of the minerals that make up the earth's mantle. This is quite a scientific feat, as it is most often done using high-pressure diamond anvil cells, with a laser beam passing through the diamonds to access samples held at mantle pressures, and a sophisticated Brillouin spectrometer measuring the scattered, energy-shifted photons that reveal the minerals' elastic properties. These, in turn, provide information regarding the stability and seismic velocities of the mineral phases over the entire depth range of the mantle. Jay's prominent research career includes authorship on over 150 peer-reviewed publications to date, many of them cited over 100 times, and a wide array of collaborations, some extending beyond geology. Jay explains, "Although my main interest is in trying to understand the structure and chemistry of the Earth's mantle, the underlying principles and techniques have much common ground with materials science and condensed matter chemistry and physics. I've been lucky to find many collaborations outside of Geology at U of I, especially in the materials science and engineering department."

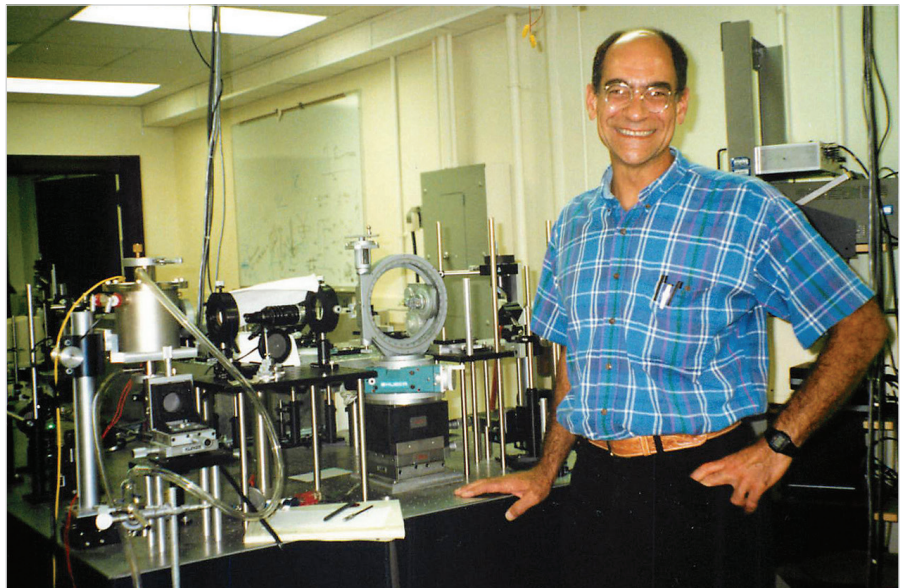
Jay is a leader in the geophysics community, having served as president of the Consortium for Materials Properties Research in Earth Sciences (COMPRES). This is a large consortium with an annual budget of more than \$2,500,000, enabling researchers to conduct advanced, high-pressure science on world-class equipment and facilities. It facilitates operation of synchrotron X-ray beam lines, develops new technologies for high pressure research, and advocates for science and educational programs. Jay was the founding president in 2002-2003, then returned to the role from 2010 to 2015.

In his teaching career, Jay played a key role in the department's geophysics program, teaching core graduate classes spanning a range of central topics, mostly notably the chemistry and physics of the earth's interior. He continued to cover these topics even during the period when, as president of COMPRES, he was nominally released from teaching. Jay says, "I still had an active research program and grad students while running

COMPRES, and the students needed exposure to a certain body of information. So there was no vacation from teaching." Over his career, Jay also taught undergrad courses on mineralogy and introductory geophysics, and general education courses, including Physical Geology, Geology of the National Parks, and The Dynamic Earth for the Campus Honors Program. He also served as department head.

Jay mentored graduate students who then rose to prominent positions, with Jennifer Jackson and Jin Zhang now successful faculty members in geoscience at the California Institute of Technology and the University of New Mexico, respectively. Jason Nicholas and James Palko are now faculty members in materials science at Michigan State and University of California, Merced, respectively. Stas Sinogeikin served as associate director for the HPCAT facility at Argonne National Lab until recently, when he formed his own company to create instrumentation for the high pressure research community. Many former students went on to jobs in industry, including Texas Instruments, British Petroleum, Shell Oil, Facebook, St. Goban Industries, and Intel. Jay strongly believed in getting undergrads involved in research. He won the Amoco-UIUC Award for Excellence in Guiding Undergraduate Research and former undergrad advisees Megan Elwood and Eric Kiser went on to faculty careers at the universities of Oklahoma and Arizona, respectively. "I have been very fortunate to have had extremely talented students and postdocs involved in research with me over the years," he says.

Jay is an elected fellow of the American Geophysical Union and the Mineralogical Society of America. He was also awarded an honorary doctorate (Honoris Causa) from the University of Lyon, France. ✨



Jay Bass with his laboratory setup early in his career

Around the Department

Alison Anders' group welcomed a new PhD student, Nooreen Meghani, who focuses on landscape evolution following deglaciation of the Midwest. Cecilia Cullen completed her MS degree on her numerical model of groundwater contributions to stream development. Jingtao Lai continues to work on modeling glacial erosion and won the Syvitski Student Modeling Award.

Jay Bass and grad students Paul Ginsberg and Yingzhe Li have been working on building a next-generation instrument for measurement of the elastic properties of minerals under the ultra-high pressure and temperature conditions of the Earth's mantle, using Brillouin laser light scattering. This instrument incorporates new optics technologies that have only recently become available.

Max Christie recently taught a new paleobiology class. Dr. Christie has continued to work with undergraduate students on research, including the identification of Eocene and Miocene insects, the assessment of residual oil through thin section image analysis, three-dimensional morphometrics of brachiopods, and the development of virtual field trips (including a tour of the Natural History Building; see www.geology.illinois.edu/virtualfieldtrip).

Jessica Conroy's NSF CAREER proposal was funded! She also gave invited talks at the annual V.M. Goldschmidt Conference, the GSA annual meeting, and other universities. Graduate student Melinda Higley completed her PhD, then joined Calvin College as an assistant professor in August 2019.

Jenny Druhan was elected vice president of the American Geophysical Union (AGU) Groundwater Technical Committee and became a theme leader for a new Department of Energy (DOE) Energy Frontier Research Center focusing on the implications of opening tight rock formations. She served as an associate editor for Water Resources Research and presented invited lectures at the University of Arizona, the Soil Sciences Society of America annual meeting, the University of Texas, Colorado School of Mines, and Princeton University.

Bruce Fouke is in his eighth year as director of the Illinois Roy J. Carver Biotechnology Center. During the last year, Bruce and his group had eight publications in top-tier journals, gave 12 invited lectures, and received coverage in the *New York Times* and on *National Public Radio*. Ongoing work includes microfluidics experiments to learn how to control growth of microbial biofilms in sandstone reservoirs and shales in oil fields; determination of how living organisms control mineral growth (biomineralization) in coral reefs, hot springs, and the human kidney; study of infectious diseases that affect coral reefs; and reconstruction of the timing, chemistry, and microbiology of the last flow of water in ancient Roman aqueducts.

In **Trish Gregg's** research group, PhD candidate Jack Albright was awarded an NSF Graduate Research Fellowship, PhD candidate Yan Zhan was awarded a NASA Earth and Space Sciences Fellowship, and Professor Gregg was awarded an NSF CAREER Award and a NASA Earth Surface and Interior grant. PhD student Robby Goldman represented U of I as an AGU Voices for Science representative and will begin his NSF Graduate Research Fellowship in 2019 to investigate the 2018 eruption of Kilauea, Hawaii. The OASIS oceanographic field experiment in the eastern Pacific, led by Professor Gregg as Chief Scientist, successfully completed in December 2018!

In **Willy Guenther's** group, after a couple years of building, coding, and calibration, the main instrumentation in the Helium Analysis Laboratory (HAL) is fully operational. Willy hired lab manager Linda

Angeloni, who has greatly streamlined lab procedures and will attract and support more outside collaborations. Willy received an NSF CAREER grant to investigate the timing and magnitude of the Neoproterozoic erosion that created the Great Unconformity.

Lijun Liu took a sabbatical leave during fall 2018, where he spent time developing new collaborations on a project about subduction and tectonic evolution along the western Pacific. In summer 2018, Professor Liu was invited to be a CIDER lecture at University of California Santa Barbara where he spent two weeks on teaching and discussion. He presented over 20 invited talks at universities, workshops and conferences.

Steve Marshak stepped out of his faculty position and his role as Director of SESE in August 2018, and is now focusing on research, book writing, field tripping, and short-course teaching. In May 2018, he went to Hawaii to observe the volcanic eruption. He went to China in September to participate in a field trip along the north edge of the Tibetan Plateau, and he taught a short course on tectonics at Zhejiang University. Steve and his wife Kathy co-hosted a U of I Alumni Alliance trip along the coast of New England. The sixth edition of his textbook, *Essentials of Geology*, came out during the Fall.

Xiaodong Song and graduate student Jiangtao Li have recently shown, via high-resolution P- and S-wave images, that the subducted Indian mantle lithosphere has been torn into four pieces. This provides a unified mechanism for (i) Late Miocene and Quaternary rifting, (ii) mantle earthquakes in southern and central Tibet, and (iii) patterns of current crustal deformation. It suggests (iv) that the deformations of the crust and the mantle lithosphere in southern Tibet are strongly coupled and thus we need to take a "deeper view" to understand the Himalayan–Tibetan continental deformation and evolution.

Jonathan Tomkin and colleagues wrapped up the five-year, NSF-funded WIDER project, improving large science and engineering courses on campus. The take-away message: Encouraging faculty peer networks can sustainably improve instructional practices. This project had real world impact, too: Introductory U of I science and engineering classes are now better, on average.

Wendy Yang was elected as an Early Career Fellow of the Ecological Society of America in recognition of her outstanding contributions to research, teaching, and outreach in the fields of biogeochemistry and global change biology. She was also selected as an I.C. Gunsalus Scholar by the College of LAS. Professors Yang and Sanford won a grant from the NSF Dimensions of Biodiversity program to study how phylogenetic and genetic diversity in nitrous-oxide reducing bacteria can help us better predict soil nitrous oxide emissions. ✨



Visit NHB Online!

If you still haven't seen the "new" NHB, see a "virtual field trip" created by Max Christie. www.geology.illinois.edu/virtualfieldtrip/natural-history-building.html

Alumni News

1960's

Larry Rostetter (BS, '60) got in touch this past year and commented on his career path, which took him first to the Navy, where he was assigned to do work on their new computer-based air defense system. He says, "Navy ships were internetted before the word was invented." He later earned an MBA from University of Chicago, and had a successful career outside geology, but kept up with geology friends Bill Ripley and Raden Budiharto (see obituary on page 11).

1970's

Gary Hendrix (BS, '70; MS, '77) stopped by the department in February 2019. Gary worked for Citgo and other oil and gas companies for many years. Before leaving U of I, he obtained a pilot's license, and in 2001 he decided to become a commercial pilot, working for Delta until retirement. Gary lives in Kentucky.

Ron A. Kern (MS, '74; PhD, '77) worked in mineral exploration and mining until the early 1990's when he shifted to the environmental side of geology. He worked for the New Mexico Environment Department and the Arizona Department of Environmental Quality in the Phoenix area until he retired recently.

Don Miller (MS, '79) came to see NHB in August 2018. He worked for Mobil in California for 11 years, earned his PhD at Stanford, then returned to the oil and gas industry and eventually moved to the Houston area.

Professor Richard J. Reeder (BS, '75) is vice president for research at Stony Brook University. He joined Professor Bruce W. Fouke and colleagues at the Mayo Clinic and Indiana University Hospitals in studying the crystalline record of how human kidney stones grow and dissolve within the human body. Their findings were featured in the New York Times (this is really worth seeing!): **NY Times: Kidney Stones are more Beautiful than you Think**
www.nytimes.com/2018/09/19/health/kidney-stones-geology.html

1980's

Joan Crockett (BS, '83) received the Distinguished Service award from Eastern Section AAPG at the meeting in October 2018.

Gary Fleeger (MS, '80) retired in 2018 from the Pennsylvania Geological Survey, but continues as a volunteer with 12 projects in progress—way too many! He also works with Moraine State Park, in western Pennsylvania, and the supporting group, Moraine Preservation Fund, as the head of their Education Committee. Gary and his wife travel quite a bit: A week at Acadia National Park and a month out west last year, doing quite a bit of hiking, including their first 14,000-foot peak in over 30 years!

1990's

Matt Haverty (BS, '96) was named an Outstanding Earth Science Teacher by the National Association of Geoscience Teachers in 2018. He teaches Earth and Environmental Science at Amphitheater High School in Arizona.

Joel Johnson (MS, '98) received his PhD from Oregon State University in Marine Geology and Geophysics, and is currently an associate professor of earth sciences at the University of New Hampshire. Joel focuses on continental margin sedimentary records and methane hydrate systems. He and his wife have a son and a daughter and they all love to make (and consume!) their backyard maple syrup.

We saw **Bruce Miller** (BS, '93; MS, '95) at the May Alumni Reception at Yard House in Houston. Bruce is the VP Global Account Director - Chevron at Schlumberger.

Brian Phillips (PhD, '90) serves as chair of the Department of Geosciences at Stony Brook University. He is living in Stony Brook with his spouse, Katherine Sugg (PhD, '97, comparative literature) who is an English professor at Central Connecticut State, plus a few teenagers. Last summer Brian was back in C-U for the Clay Minerals Society conference and was treated to a tour of the renovated NHB by Steve Marshak.

Stanislav "Stas" Sinogeikin, (MS, '96; PhD, '99) has started his own business after working at the HPCAT synchrotron beam line at Argonne National Lab for over 12 years (as HPCAT associate director, 2013 to 2018). He now runs DAC Tools LLC (www.dactools.com), making custom scientific instruments and equipment for high-pressure scientists all over the world in universities, research institutes, and most major National Labs in the USA. He is principal investigator on a U.S. Department of Energy SBIR grant, helping to develop and improve high-pressure capabilities at cryogenic temperatures at neutron scattering facilities.

2000's

Bin Chen (PhD, '09) has been promoted to associate professor at the University of Hawaii. He is continuing his research on the properties of materials of the Earth's mantle and core, and planetary ices. He is being supported by NSF CAREER and CSEDI grants to study high-pressure properties of iron alloys under planetary core conditions. He is a proud father of six-year-old twins. Bin stopped by to see the "new NHB" in February.

Fang Huang (PhD, '07) visited NHB in late March as he was recruiting talent for the University of Science and Technology of China, where he is professor of geochemistry and also an administrator.

Anna Sutton (BS, '01; MS, '03) and her husband Patrick Stinson welcomed their second daughter to the family on March 27, 2019. Phoenix Beru Stinson weighed in at 7 lbs. 13 oz. and measured 19.5 inches. Big sister Aurora Rey is 2.5 years old and a great helper. Anna will be returning to environmental consulting at Cardno in July.

2010's

Isaac Foli (BS, '17) is pursuing his grad degree at Arizona State.

Vanessa Gabel (BS, '17) was offered a graduate position at UC-Boulder to pursue her PhD.

Norbert Gajos (MS, '14) is a geochemist at Pacific Northwest National Laboratory in Richland, Washington. He specializes in developing analytical techniques for characterizing environmental samples for applications in nuclear forensics. Norbert enjoys hiking, skiing, mushrooming and rock climbing in the Pacific Northwest.

Alison Anders enjoyed catching up with **Johanna Gemperline** (MS, '13) at the GSA meeting. Johanna is a hydrogeologist at the Maryland Geological Survey where she monitors water levels and water quality to assess groundwater sustainability and salt water intrusion. She enjoys working in Maryland where the diverse geology creates a variety of different aquifers and hydrogeologic problems.

Kalin Howell (MS, '17) is working as a geologist for GSI Environmental in Oakland, CA.

Noah Jemison (MS, '15; PhD, '18) accepted a position at Los Alamos National Lab as a Seaborg Postdoctoral Associate. He works in isotope geochemistry.

continued on page 10

Mackenzie Marti (BS, '15) started a new position as wetlands geology specialist at the Illinois State Geological Survey.

Liqin Sang (MS, '12) is currently a geophysicist at Shell Oil Company. After studying mineral physics at U of I she completed a PhD in geophysics from Texas A&M University in 2016. She is now in the Quantitative Reservoir Characterization group at Shell and she derives rock and fluid properties of hydrocarbon reservoirs from reflection seismic data. She recently got married and lives with her husband, Boxiao, in Houston.

Julia Waldsmith (BS, '11) is with NOAA Commissioned Officer Corps at NOAA.

Jin Zhang (PhD, '14) is an assistant professor at the Department of Earth and Planetary Sciences and Institute of Meteoritics at the University of New Mexico, and received a CAREER award from the National Science Foundation. She continues research on the high pressure-temperature thermoelastic properties of major mantle minerals. She serves on the COMPRES Education Outreach and Infrastructure Committee (2017-2020), and was recently elected secretary of the AGU Mineral and Rock Physics section (2019-2021). ✨

In Memoriam: Ralph Langenheim



Ralph L. Langenheim Jr., professor emeritus of stratigraphy and paleontology, passed away on August 3, 2019, at the age of 97. Ralph was born in Cincinnati, Ohio, on May 26, 1922, to Ralph and Myrtle Langenheim; he is survived by his wife Casey, children, step-children, and their children.

Ralph earned his bachelor's degree at the University of Tulsa, a master's degree at the University of Colorado, and his doctorate at the University of Minnesota in 1951. Ralph's academic

career began as assistant professor at Coe College, from 1950 until 1952; he then was assistant professor at the University of California, Berkeley, from 1952 until 1959. He completed his professional career at Illinois from 1959 until 1992.

During World War II, Ralph was an officer in the Navy, and served on LCI (Landing Craft Infantry) 551 at Utah Beach during the Normandy invasion. Ralph did not talk very much about his service experiences at Normandy, but sympathized deeply with the hardships facing soldiers as they landed. Offshore, ships came under artillery fire, and Ralph noted that "being shot at does awaken your awareness to the uncertainty of life." Interviews with Ralph by the local public radio/TV station can be found by visiting will.illinois.edu and searching for "Langenheim."

During his professional career, Ralph specialized in stratigraphy and paleontology, his primary paleontologic interests in Late Paleozoic corals, brachiopods, fusulinids, and conodonts. But perhaps Ralph's first love was for field geology. He spent many field seasons mapping in the west, mostly in the Arrow Canyon range of Nevada, the work providing material for student research and theses at all levels. Ralph inherited the fall weekend field trip course developed by Harold Wanless, and over a number of years, he directed and taught in the department's field course in Sheridan, Wyoming. In 1969, Jim Granath (BS, '71; MA, '73), Ted Labotka (BS, '71), and Bill Brackin (BS, '70) were plucked from the Sheridan camp to help with ongoing Nevada mapping and eventually become authors on a publication. Granath recalls: "Ralph did things like that for a lot of students. Students are molded by contact with faculty, and Ralph was certainly a major formative force in our careers. We will all be forever

grateful for that." For a few years in the late 1970s, Ralph taught at the University of Kentucky geology field camp; Kentucky professor Frank Etnensohn (PhD, '75) said Ralph's programming still can be seen in the Kentucky course. Joan Crockett (BS, '83) described his style in this way: "Doc [Langenheim] did not spoon feed us, and we learned many lessons, shared many laughs, and sometimes endured his sharp humor. He taught us to think for ourselves and to laugh at ourselves." Comments from Mike Bourque (MS, '78) summarize the nature and influence of Professor Ralph Langenheim: "Ralph was generous with his time and guided me through my teaching assistant duties in a way that served me better in my professional and personal life than the rigors of academic research. On an interpersonal level, I considered Ralph a bit gruff, but I loved his wry sense of humor. At times I felt ignored, but I came to know he intended to give me space to make mistakes and learn from them. He was a key enabler of my professional success. Whenever I reflect on my experience at Illinois, my thoughts always carry me back to Ralph along with a smile and deep appreciation."

In retirement, Ralph's primary emphasis turned to local politics where he was a long-term member of the Champaign County Board, and ultimately esteemed highly enough to receive an extended 'Life Remembered' story in The (Champaign-Urbana) News-Gazette after his passing, the author noting that Ralph was known for his "ornery" yet typically cogent commentaries on matters of concern to the board. The free-spirited and engaging Ralph Langenheim will be widely missed. ✨



PROFESSOR DON DEERE: 1922-2018

Professor Don U. Deere, who taught engineering geology at Illinois from 1955 to 1972, passed away on January 14, 2018, in Gainesville, Florida, at the age of 95. A world-renowned engineering geologist and expert on tunneling, dam building and design, and the construction of large underground spaces, he received numerous distinctions, including being elected to both the National Academy of Engineering and the National Academy of Sciences. Don received his PhD in civil engineering at U of I. In 1955 he accepted a joint appointment in the departments of civil engineering and geology at Illinois and helped lead the geotechnical engineering program to international prominence. In 1972 he left U of I to pursue full-time consulting and co-founded Deere and Merritt, an international consulting firm in geology and rock mechanics.



Major projects to which he contributed included the construction of the World Trade Center, the Channel Tunnel, the Washington, D.C., subway, and numerous hydroelectric facilities throughout the Americas, most notably Itaipu, the world's largest hydroelectric project at the time. ✨

Alumni Obituaries

David “Dave” Brierley (BS, '49) passed away on March 13, 2019 at the age of 92. He was a veteran of the U.S. Army. Dave was a practicing certified petroleum geologist for 70 years, spending 45 years of his career in Osage County, Oklahoma. He opened up and undertook well-side geology.

Henry S. Brown (MS, '54; PhD, '58) passed away at the age of 88 on December 30, 2018. While completing his PhD at Illinois, Henry was a geology professor and department head at Berea College. He joined the faculty at North Carolina State University in 1958 and stayed there until he retired in 1989. His last three years there, Henry was head of the Marine, Earth, and Atmospheric Sciences Department. He established, in 1971, a consulting firm known as Geological Resources that continues today, and he was appointed to the North Carolina Mining Commission.

Raden “Budi” Budiharto (BS, '59) passed away in early February. Budi returned to Indonesia after Illinois, and, most recently, worked as an independent consultant in oil and gas exploration.

Charles J. Chantell (BS, '60) passed away at the age of 87 on October 27, 2018. After serving in the 82nd Airborne, Charlie enrolled at the University of Illinois at Navy Pier and completed his bachelor's degree at U of I. He joined the faculty of the Biology Department at the University of Dayton in Ohio. During his tenure Charlie directed the pre-med and med tech programs, chaired the department, and also served as associate dean and interim dean of the College of Arts & Sciences. He retired in 1999 after 35 years.

Jay O. Gallagher (BS, '57) passed away on September 4, 2018. After Illinois, Jay obtained his master's degree from the University of Colorado. During his career, he worked for the Superior Oil Company, including exploration in Libya and South Africa, and he opened the London office for Superior. He later started his own consulting firm, Gexco, was the President and CEO of Texoma Production Company, and was proud to be associated with the CLK Partnership of Houston/New Orleans.

Raymond “Ray” L. Irwin (BS, '49) passed away on July 24, 2018 at the age of 91. During his studies at Illinois, Ray served in the US Navy in WWII. He returned from war and finished his degree. He settled in Sacramento with his wife, Donna. Ray skied and played tennis until age 89, and made yearly trips to Europe with Donna.

George H. Keller (PhD, '66) died on October 12, 2018. During his career, he worked with the Office of Naval Research, and later led a NOAA research lab in Miami. In 1975, George joined the faculty in the

College of Oceanography at Oregon State University and later became the Vice Provost of Research and International Programs.

John P. Kempton (PhD, '62), Senior Geologist Emeritus at the ISGS, died on August 12, 2018. John did his doctoral work under George White, and we note that his dissertation, “Stratigraphy of the Glacial Deposits in and Adjacent to the Troy Bedrock Valley, Northern Illinois” was signed by White, Don Deere, Harold Wanless, Ralph Grim, and Albert Carozzi—quite an impressive dissertation committee! Kempton worked as a quaternary geologist and hydrogeologist for the ISGS for many years and took part in important studies of the Mahomet aquifer and a range of quaternary geology studies across Illinois.

Neal R. O'Brien (MS, '61; PhD, '63) passed away on March 26, 2019 at the age of 81. Neal was the first chair of the geology department at SUNY Potsdam. During sabbatical leaves, he and his family lived in Japan while Neal conducted research at Kyoto University. He retired in 2006 as professor emeritus.

William R. Pampe (BS, '47; MS, '48) died on November 20, 2018. He was 94 years old. While he was at U of I, he was called to active duty in the U.S. Army and fought in the Battle of the Bulge in Belgium in 1944. After receiving his PhD, William taught Geology at Lamar University for twenty-three years.

Christopher K. Rapp (BS, '87) passed away on May 31, 2019. During his career, he served as deputy director and director for multiple Public Works departments. Chris also served the city of Virginia Beach as a stormwater management regulatory engineer.

Andrew Schaaf (BS, '06) died December 1, 2018. He was working as a geologist in Billings, MT, and is survived by his soulmate of many years, Elizabeth Leweling (BS, biology, '03).

Alan C. Swanson (BS, '59) died on July 28, 2018. He served for 25 years in the U.S. Air Force and retired as a Lieutenant Colonel in 1983—a command pilot with 500 combat hours and over 7,500 total flying hours. During his military career, Alan was awarded the Distinguished Flying Cross among numerous other medals.

James “Cotter” Tharin (MS, '58; PhD, '60) passed away on August 9, 2018, at the age of 87. He founded the Department of Geology, now named the Department of Geological and Environmental Sciences, at Hope College in Holland, Michigan. Cotter joined the faculty at Hope in 1967 and retired in 1996. He chaired the department his entire career at Hope and also served as the Sailing Club's first adviser. ✨

Student Awards and Degrees

Estwing Award

Christopher Campe

R. James Kirkpatrick Award for Outstanding Graduate Research in Geology

Yan Zhan

Harriet Wallace Outstanding Woman Graduate Student Award

Naomi Wasserman

Harriet Wallace Outstanding Woman Undergraduate Student Award

Alexandra Dimonte

Harriet Wallace Geology Graduate Student Service Award

Nooreen Meghani

Harriet Wallace Geology Undergraduate Student Service Award

Dana Drinkall

Outstanding Graduate Teaching Assistant Award

Spring 2018: Mahta Gholizadeh Ansari

Fall 2018: Paul Ginsberg

Outstanding Senior Award

David F. Raynes

Morris Leighton Research Grants

Robert Goldman
Karoline Bruckel
Ching Chang
Julia Cisneros
Michael DeLucia
Sarah Dendy
Shaelynn Kaufman
Jingtao Lai
Nooreen Meghani
Nicole Murray
Diandian Peng
Naomi Wasserman
Allie Wyman
Yi Yang
Yan Zhan

Jackson Geology Graduate Student Research Awards

Jack Albright
Mahta Gholizadeh Ansari
Karoline Bruckel
Zebin Cao
Mingfei Chen
Julia Cisneros
Jingtao Lai
Xiaobao Lin
Olivia Thurston
Yaoyi Wang
Hongyu Xiao
Yi Yang

Winslow Research Grants

Mahta Gholizadeh Ansari
Naomi Wasserman

Midwest Alumni Undergraduate Research Grants

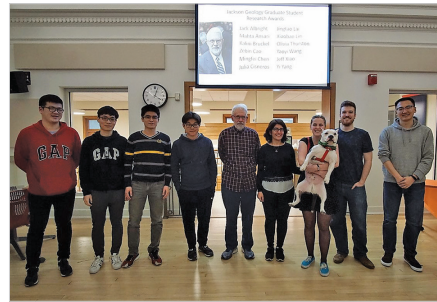
Jack Brown
Christopher Campe
Miguel Castillo
Marjie Cone
Alexandra Dimonte
Dana Drinkall
Brooke Dykstra
Michelle Frankel
Andrew Garcia
Michael Li
Bohao Mai
Katie Mandera

DEGREES CONFERRED IN 2018-2019

Bachelor of Science Degrees

August 2018

Anthony T. Borrino
John S. Luchok
Brian Kristoffer Mallari
Bailey J. Moser
Marlena J. Paterson
Wesley R. Pesantez
Mingyue Yu



Several Jackson Geology Graduate Student Research Award recipients

December 2018

Devin M. Clubb
Nathaniel Christopher Fifield
Marcin Pawel Gron
Jiyan L. Hatami
Min Je J. Lee
Henrique Menezes
Ifunanya B. Obidi
Kyra Michelle White

May 2019

Noe Aristeo Arreola
Erich M. Ceisel
Chad R. Dieska
Dana E. Drinkall
Michelle Alana Frankel
Andrew Santiago Garcia
Rain I. Hammon
Robert C. Hill
Diana M. Leal
Geyang Li
Nathan Tyler Mack
Bohao Mai
Izz Irfan Bin Mohd Fauzi
Catherine Bliss Nield
David F. Raynes
Piotr Szocinski

Master of Science Degrees

August 2018

Zihe Zhao “The Influence of Step Topography on the Behavior of Density Currents – A 2D Numerical Study”

December 2018

None

May 2019

None

Doctoral Degrees

August 2018

Jiashun Hu “Studying Subduction Zone and Continental Evolution in South America Using Data-Oriented Geodynamic Models”

Jiangtao Li “Seismic Studies of 3-D Elastic and Anelastic Structure of Crust and Upper mantle in Western China”

December 2018

Melinda Higley “Archives of Climate Variability on Kiriritimati: Lacustrine, Aeolian and Remote Sensing Perspectives”

Noah Jemison “Uranium Isotopes as Indicators of Uranium Immobilization and Remobilization in Contaminated Aquifer Settings”

May 2019

None ✨

Faculty 2018-2019

Stephen Altaner (Associate Professor and Associate Head)

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)

Gary Parker (W. Hilton Johnson Professor)

Xiaodong Song (Professor)

Gillen Wood (Professor)

Wendy Yang (Associate Professor)

Specialized Faculty

Max Christie (Lecturer)

Ann Long (Teaching Lab Specialist)

J. Cory Pettijohn (Teaching 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 & GIS)

Adjunct Faculty

Ercan Alp

Kurtis Burmeister

Todd Cole

Brandon Curry

Leon Follmer

David Grimley

Sam Himes

Dennis Kolata

Hannes E. Leertaru

Andrew Phillips

George Roadcap

William Shilts

Wolfgang Sturhahn

Scott Wilkerson

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Thomas F. Anderson

Craig Bethke

Daniel B. Blake

Chu-Yung Chen

Wang-Ping Chen

Donald L. Graf

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Chandré Johnson (Office

Support Associate) ✨

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2018 Geology Faculty Publications

ALISON ANDERS

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Modeled Postglacial Landscape Evolution at the Southern Margin of the Laurentide Ice Sheet: Hydrological

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STEPHEN MARSHAK

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GARY PARKER

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ROB SANFORD

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JONATHAN TOMKIN

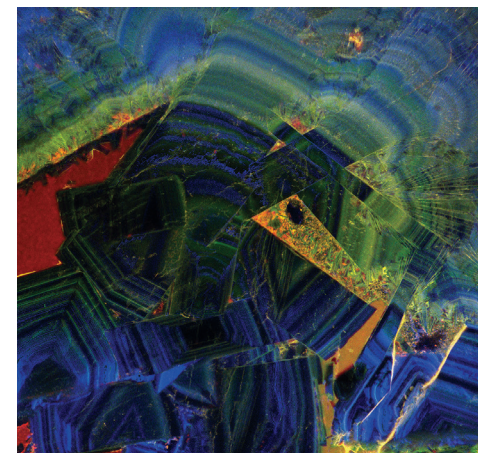
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GILLEN D'ARCY WOOD

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Super resolution auto-fluorescence (SRAF) image of a human calcium oxalate kidney stone (150-micron field of view; Fouke Lab).

2018-19 Colloquium Speakers

September 6 *The Phillips Lecture (Joint event with Plant Biology)*
“Using the Past to Reinvent Conservation for a Post-Normal World”
Steve Jackson, USGS, SW Climate Science Center, Tucson, AZ

September 13 *R. E. Grim Lecture*
“From grains to plates: Mesozoic and Cenozoic tectonics along the southern Alaska convergent margin”
Emily Finzel, University of Iowa

September 20 “Relationships between CO₂, thermodynamic limits on silicate weathering, and the strength of the silicate weathering negative feedback”
Matt Winnick, UMass Amherst

September 27 “Ion adsorption phenomena into the hydrothermal regime”
Mike Machesky, IL State Water Survey

October 4 *Presentation of the Department of Geology 2018 Alumni Achievement Award*
“The multi-million-pound uranium deposit at Panna Maria, TX and my 65-year journey in Geology”
Dr. Norb Cygan (BS, '54; PhD, '62)

October 11 *Buckley Lecture in Environmental Geology*
“Centennial Glacier Retreat as Categorical Evidence of Regional Climate Change”
Gerard Roe, U Washington

October 18 *Valedictory presentation - retiring faculty member*
Steve Marshak, U of I

October 25 Geology Grad Student Lightning Talks

November 1 *Buckley Lecture in Environmental Geology*
“The Energy-Water Nexus of Hydraulic Fracturing: A Geochemical Perspective”
Avner Vengosh, Duke University

November 8 *R.E. Grim Lecture*
“The Green Dog That Did Not Bark: The Curious Incidence of Seismic Anisotropy Beneath Mid-Ocean Islands”
Jeffrey Park, Yale University

November 15 “Exploration of Unknown Microbial Life in Great Boiling Spring, Nevada”
Brian Hedlund, UNLV

November 29 *Kirkpatrick Lecture*
“New Insight into the Origin of the New Madrid Seismic Zone”
Christine Powell, U Memphis

December 6 “Interpreting Structure and Reservoir Stress with Microseismic Data”
Sherilyn Williams-Stroud, ISGS

January 24 “Forecasting the 2018 eruption of Sierra Negra Volcano, Galápagos”
Trish Gregg, U of I

January 31 *The R. James Kirkpatrick Lecture* “Chasing Helium: Mantle-to-Surface Connections to Water Quality and Geomicrobiology”
Dr. Laura Crossey and Dr. Karl Karlstrom, University of New Mexico

February 7 *The Jack and Richard Threet Lecture in Sedimentary Geology*
“Environmental controls on the spatial variation in sand wave morphology and dynamics on continental shelves”
Thaïenne van Dijk, Deltares, Delft, Netherlands

February 14 “Fossils, Data, and the Discovery of Life’s History”
David Sepkoski, U of I, Thomas M. Siebel Chair in History of Science Professor

February 21 “Real and Apparent Changes in Erosion and Deposition Rates Through Time”
Rina Schumer, Desert Research Institute, Reno, Nevada

February 28 *The Richard Hay Lecture*
“Can a record of Ocean Chemistry be preserved in Oceanic Crust?”
Sasha Turchyn, University of Cambridge

March 7 *Glenn and Susan Buckley Lecture in Environmental Geology*
“New biomarker tools for reconstructing terrestrial climate”
James Bendle, University of Birmingham

March 14 “Permafrost conditions in south-central Wisconsin over the last two glacial cycles from cave and moraine chronologies”
Shaun Marcott, University of Wisconsin Madison

March 28 “Methane bioproduction: Predicting the unpredictable”
Qusheng Jin, University of Oregon

April 4 *Consortium for Material Properties Research in Earth Sciences (COMPRES) Distinguished Lecture*
“Using Electrical Conductivity to Probe the Interior of the Earth”
Anne Pommier, University of California San Diego

April 11 *AEG Richard H. Jahns Distinguished Lecturer in Applied Geology*
“Let’s Talk: A conversation on how we communicate in Science”
Deborah Green, Geologist Writer

April 18 “On the turbulence dynamics of environmental flows: cases with low-order topography, canopy and thermal stratification”
Leo Chamorro, U of I Mechanical Science and Engineering

April 25 *Glenn and Susan Buckley Lecture in Environmental Geology*
“Stressful Times: Coral Reefs in the Anthropogenic Ocean”
Anne Cohen, Woods Hole Oceanographic Institution ✨