

# Department of Geology

U N I V E R S I T Y O F I L L I N O I S A T U R B A N A - C H A M P A I G N

## Plans for NHB Renovation Underway

**T**he Natural History Building may be closer to becoming a model of 21st century learning and research – due in large part to a bit of termite damage and a century-old architectural error.

The building, which currently houses the Departments of Geology and teaching facilities for biology, was slated for restoration at some point in the future; and for years has been hovering at about No. 15 on the list of university renovation projects. But the discovery of sagging concrete floors in the south and west wings last summer has led the campus to move the complete renovation of NHB to the top of its priority list.

“Admittedly, the current closure of about 40% of the building has created major challenges to its occupants,” says Steve Marshak, Geology professor and



Steel beams support the sagging floors of the Natural History Building

Director of the School of Earth, Society, and Environment (SESE), “But it has also afforded us the opportunity to start the process of turning NHB into an efficient, advanced setting that will utilize the modern concepts of how people teach and do research today.”

The original building was built in 1892, with two additional sections added in 1908 and 1921. Serious structural deficiencies were uncovered in the 1908 addition while facilities workers were inspecting the building in the spring of 2010, forcing a hasty evacuation of that part of the building. Essentially, the concrete floors were inadequately made with nearly one-fourth of the necessary reinforcement bars, so the floors have little to no load-bearing strength. Due to safety concerns, the decision to move people out of

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## Curriculum Expands Global Reach

**T**hree faculty members made a trip to Vietnam this past January as part of the Geology Department’s ongoing exchange program with the Hanoi University of Science (HUS). Department Head Wang-Ping Chen, Steve Marshak, and Michael Stewart spent a week in northern Vietnam, teaching classes, helping curriculum development, and visiting unique geologic exposures in an effort to further the Department’s global outreach and foster its relationships with prominent universities overseas.

The trip was part of an ongoing exchange that began in the fall of 2009 when Dr. Bui Duy Cam, the Rector of HUS led a delegation that includes Drs. Nguyen

Van Vuong and Do Minh Duc, Dean and Associate Dean of the Faculty of Geology to visit the Geology Department here in Champaign-Urbana. Like many other campuses in the Vietnam

National University System, HUS is in the process of collaborating with various US institutions to revise their curriculum. Attracted to the international reputation of UIUC in general and that of the Department in particular, officials from the HUS plan to model their



Karst topography at Halong Bay, Vietnam

curriculum in geosciences after the Department’s current offerings.

Immediately after the initial visit, faculty from HUS began observing

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## LETTER FROM THE HEAD

...We have rightfully regained our position as a top-20 graduate program...

The National Research Council released its evaluation of doctoral programs on September 28, 2010. The usual fuzziness and statistical caveats notwithstanding, among 141 graduate programs in geosciences, ours ranked at the 18th in the survey-based and the 22nd in the regression-based rankings, respectively (or top 15 on a percentile basis.) This progress is particularly significant in that it is achieved in spite of dwindling support from the State. In other words, your generous support of the Department played a major role in helping our students, staff, and faculty who worked tirelessly and persistently to improve the quality of instructions, research, and public engagement.

This is much needed good news amidst the Natural History Building's unnatural disaster which came to light on the morning of June 10, 2010. I learned the bad news as I was boarding a flight to San Francisco (then on to the Western Gneiss Region of Norway) and this issue of the Newsletter includes a full write-up on that story. For happier news, we report several high-profile awards garnered by our alumni, and feature the profile of another recent alumnus who has accomplished a lot in just a few years after obtaining his doctoral degree from the Department.

Before the recent surge in study abroad and programs in global studies, we always knew that such experiences are particularly important for geoscientists whose field areas are the Earth and other planets. While field excursions to exoplanets (including the so-called super-Earth) are not yet realizable, our students and faculty are taking full advantages of field experience ranging from local geological issues to the Troodos ophiolite in Cyprus.

Many of you know that the latter is one of only two places on the Earth where the Moho is exposed. Some of you may even remember that a former member of our faculty and an alumnus, R. J. Kirkpatrick, was involved in a drilling project of the Troodos ophiolite. In any event, please read the articles about these memorable trips and more, including an excursion to the Red River shear zone and the Halong Bay in Vietnam.

In northern Vietnam, children are still finding slag-like materials in the field, probably left by carpet-bombing in the 1960-70's, but the people are extremely friendly and as a whole, there is optimism and construction everywhere as the economy takes off. As our exchange with Vietnam becomes a routine, there are initial discussions with colleagues in China and Jordan to further the global impact of our curricula and research. To this end, we also welcome suggestions from you who already have collaborations and contacts in many corners of the globe. As always, we love to hear from you.

As I tap out this message on my laptop, 16 students from our Department are heading out to field camp. This time, the yearly ritual is anything but routine—ten

iPad2's are going with the students. These brand-new units—acquired through your generous support—are already loaded with an integrated set of new tools for fieldwork (compass that automatically corrects for magnetic declination, clinometer, GIS, photography that can be annotated on the spot, written/audio/video records, etc.) We are very excited about this new approach! I have written a brief tutorial and would welcome your comments and suggestions (<https://www.uiuc.edu/goto/pubs/Geol417Summer2011/GeoClino4Fieldwork.pdf>).

After 30 years of service at UIUC, with the last four as Department Head, I am leaving the campus to focus more on research. I would like to take this opportunity to thank all of you, our alumni and friends, for your unwavering support of the Department and the campus. As I often remarked at our receptions in conjunction with annual meetings of the GSA and the AAPG, interacting with you in person is among the best parts of being Head. I shall maintain on-going ties with the Department and the campus so I look forward to seeing you again in the future.

– Wang-Ping Chen

## Greetings to the U of I Geology Community!



Upon Wang-Ping's retirement, I will be stepping up to become Head of the Department. I look forward to working with, and getting to know, all of you who connect to the department and have benefitted from its academic and research prowess over the years. The next several years are going to be both exciting and challenging, to an extent not seen around here in the 14 years I have served on the faculty.

We're glad to see rising interest in Geology here on campus and increased recruitment of our graduates. We're also working with Atmospheric Sciences and Geography, our partners in the School of Earth, Society and Environment, to build an enormously successful new major that bears the same name. And within the next five years, we expect to rebuild and restore the Natural History Building so our home on the quad can return to full function and serve new generations of Geoscientists. Of course, this involves enormous effort and disruption in the next few years. Similarly, the expected retirement of several key faculty members during the same time period presents us with both the challenge and the excitement of rebuilding the faculty.

This is an exciting time around here and I am happy to serve the department as we work toward a bright future. We'll update you on our progress; please do stop in to see how it's going!

– Tom Johnson

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**Department Head:** Wang-Ping Chen ([wpchen@illinois.edu](mailto:wpchen@illinois.edu))

**Office Administrator:** Marilyn Whalen ([mkt@illinois.edu](mailto:mkt@illinois.edu))

**Editor:** Kate Quealy-Gainer ([kqueal1@illinois.edu](mailto:kqueal1@illinois.edu))

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

## Plans for NHB Renovation Underway

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the building took effect the next day after the engineering report was received on June 10 of 2010.

“It was all quite dramatic,” says Marshak, “We were told to leave the 1908 part of building immediately, with only our necessary personal items.”

Eight of the fourteen faculty members, along with numerous graduate students and staff members, had to squeeze into either the structurally sound wings of the building or move out of the building altogether. In addition, the business operations of SESE and the administrative offices of the Geology Department and three major research labs were also affected. Just about everyone in the Department, including faculty, staff, and graduate students worked overtime to ensure that classes still started on time for

the fall semester with minimal disruption to the learning experience for students.

Still, the current solutions to the building’s space issues (including a rolling trolley of computers and doubled up labs and offices) are simply not sustainable. Therefore, the University has hired a team of architects to develop a plan to redesign the building completely.

The main objective of the new plans is to create a building that lends itself to needs of a 21st century teaching and research institution. Hopefully, all three departments of the SESE—Geology, Atmospheric Science, and Geography—will be brought under a single roof, giving each access to modernized classrooms, labs, and amenities while facilitating multidisciplinary research and intellectual discourse. The teaching component of the

School of Integrative Biology (SIB) will also need to fit into the building. To do this, it is possible that the entire building will have to be gutted and then redone completely, but Marshak is hopeful that such a process can occur in stages, minimizing the impact on people.

The University has requested nearly \$78 million from the State for the renovations. Due to the financial challenges facing the State and the University, alternative and/or additional funding will most likely have to be explored as well, says Marshak. “NHB is on the National Registrar of Historic Places and is a core building of the Quad,” he says, “With the right plans and enough funding, it could become a real gem on the Illinois campus.”

## Curriculum Expands Global Reach

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instructional activities and exchanging ideas with instructors in the Department. Since then, HUS has sent a delegation of instructors every semester and has already started offering classes under the revised curriculum at their own campus.

“Their plan is an ambitious one,” says Wang-Ping Chen, “HUS teaches not only natives of Vietnam but also many international students from surrounding countries. The curriculum modeled after ours now has a global reach and we are excited to encourage the propagation of knowledge as well as good will.”

Faculty members of the Department have a standing invitation to visit HUS to continue collaborating on all facets of teaching, research, and public engagement.

“We were very impressed with both the ongoing instructions and the quality of students,” says Chen, “All instruction is given in English, so students are not only learning the content of courses, but also

using a second language. Their dedication is apparent.”

In spite of record-breaking low temperatures, UIUC faculty members also took several trips out into the field during the visit, exploring natural attractions and geologic features that make Vietnam a distinctively interesting region for research. One trip was dedicated to explore parts of the famous Red River shear zone. Along this major strike-slip fault system, high-grade metamorphic rocks are exhumed and evidence of recent faulting and remnants of the Indonesian orogeny, a major tectonic event in southern Asia during the Mesozoic era, are both present. In addition, UIUC faculty was treated to a visit to Ha Long bay, famous for its towering limestone karsts where a 1997 James Bond movie (“Tomorrow Never Dies”) was filmed.

“Our hosts were incredibly gracious and the entire trip was simply fascinating,” says Marshak, “Between the gor-



Faculty members study rock formations in Vietnam

geous natural setting and the booming economic development, it was truly and captivating place to be.”

The exchange program continues as currently a delegation from Hanoi is visiting campus, sitting in on classes taught by Marshak and Steve Altaner. Plans for another reciprocal visit to Vietnam are also being considered.

# Recent Alum Excels In the Field and the Classroom

Growing up as a kid in the Chicago suburbs, Michael Brudzinski (PhD 2002) knew two things for certain: one, the beach and the woods are far more interesting than the manicured landscape that surrounded him, and two, helping other people learn was just as fun as learning himself. These two insights have taken him from the Midwest to the sunny state of Florida, the Pacific Northwest, southern Mexico, and finally, back to the Midwest again last year, when he earned tenure as a geology professor at the Miami University in Ohio.

"I always knew I wanted to be a scientist," Brudzinski says. At a young age, he was fascinated by natural settings, particularly the woods and the beach, where he would investigate the living and eating habits of the resident critters. As a freshman at Eckerd College in Florida, Brudzinski initially pursued a degree in marine biology but soon changed tracks after taking a class on plate tectonics and seafloor exploration.

"I happened to be watching Planet Earth on PBS the night before I chose some of my autumn classes and decided to give that course my top choice," Brudzinski says, "I thoroughly enjoyed the class and it led me to change my major to focus on plate tectonics and geophysics. I am particularly grateful to Sarah Kruse, the daughter of Illinois emeritus professor Uli Kruse, who taught my autumn term course and was my undergraduate research adviser."

After receiving his undergraduate degree in marine geophysics, Brudzinski moved to Champaign-Urbana to pursue his doctoral degree in tectonics and geophysics. The relocation held both professional and personal promise: Dr. Wang-Ping Chen (current Head of the Department) offered a research program geared toward his interest in seismology, and Brudzinski's then girlfriend (now wife) was finishing up her undergraduate degree at the U of I.

"It seemed like a good match all around," says Brudzinski.

By this point, Brudzinski knew he wanted to be both a researcher and an instructor. "I found it very rewarding when I had a chance to teach my fellow students,

especially when they'd have that ah-hah moment.," he says, "Once I got to college I realized that there were teaching opportunities that would allow me to also do scientific research; so I realized a faculty position at a college or university would be an ideal career for me."

Working with Dr. Chen and other geology faculty members prepared Brudzinski for just such an academic career. Brudzinski found himself learning the art of writing a detailed, scientific paper as well as familiarizing himself with other disciplines and understanding how different scientific fields benefitted from cross-fertilization. The resources of the UIUC campus and the Department also helped Brudzinski build his teaching philosophy and portfolio.

"I learned to integrate the research and teaching components of my career," he says "I feel like research is just a specialized form of learning, and teaching is all about learning."

After receiving his doctorate from Illinois, Brudzinski went on to receive an

endowed postdoctoral fellowship at the University of Wisconsin-Madison and then joined the faculty at the Miami University in Ohio. His current research focuses on low level seismic vibrations, called tectonic tremors, that recently have been discovered in a few subduction zones. He has ongoing seismic recording experiments in the Pacific Northwest and Mexico, where student workshops are an integral part in developing these field projects. He hopes to strengthen the integration of his different activities through a National Science Foundation CAREER Award, in which he seeks to expand the inquiry-based learning approach to other classes, to build undergraduate research experiences, and to offer new workshops for teaching environmental science in high schools.

"I have enjoyed finding a position where I can devote time to teaching and research equally." Brudzinski says, "I am most proud that I have been able to work on both new research ideas as well as many new ideas in my classroom."

## Powers Medal Awarded to Shelton

John W. Shelton (MS '51, PhD '53) was named the 2011 recipient of AAPG's highest honor, the Sidney Powers Medal, and was recognized for his work as a scientist, consultant, map maker, data digitizer, and teacher at the opening session of the 2011 AAPG Annual Convention and Exhibition in Houston.

Shelton's career has taken him from the river basins of Montana to the shores of North Africa and China. He was an early developer of the concepts and application of sedimentary petrology and depositional environments to petroleum exploration. At Shell Research he was among the pioneers in applying depositional environments to prospect definition. Shelton also later took lead roles as both director and contributor on major projects in the North Sea, North Africa, the Mediterranean, Africa, and China.

Shelton was the editor of several AAPG publications for four years during the 1970s and later developed the AAPG Datapages, the Association's digital library and publishing program. His leadership continued the growth of the digital library, and an award in his name is now annually given to recognize the best contribution to the Search and Discovery website.

Besides his research and data digitization projects, Shelton has dedicated much of his time to teaching. Generations of young geologists have benefited from his field expertise and practical wisdom during Shelton's twenty-year career as a professor at Oklahoma State University.

The Sidney Powers Medal is approved by the Executive Committee of the AAPG and given to a geologist who defines the profession through a prestigious career. Shelton is the 64th person to receive the award since AAPG started presenting it in 1945.

## Leinen Receives LAS Alumni Achievement Award

**M**argaret Leinen (BS '69) was awarded the 2010 LAS Alumni Achievement Award for her work as an oceanographer, biogeochemist, paleoceanographer and science administrator.

Although she began her undergraduate career as a chemistry major, a field trip with several geology professors to the Sangamon River sparked an interest in geology, which eventually led her to research in ocean sedimentology and biogeochemistry. Now known internationally for her studies of the ocean and its effect on the world's climate, Leinen has helped organize and administer a number of far-reaching, multidisciplinary research projects.

In the early 1980s, Leinen helped launch the Joint Global Ocean Flux

Study, an integral part of global climate research and considered to be one of the most ambitious ocean biogeochemical research programs ever mounted. She has served on a multitude of national and international committees dealing with oceanography and climatology as well as serving as an Assistant Director of the National Science Foundation (NSF) where she led the Geosciences Directorate and managed a \$700 million annual budget between 2000 and 2007.

Leinen is also the founder of two nonprofit environmental organizations: Climos, a company that supports research on ocean fertilization, and the Climate Response Fund, an organization that looks at issues and supports research on other possible climate techniques to slow the rise of global temperatures.

Most recently, Leinen has accepted a new position as Executive Director of the Harbor Branch Oceanographic Institute, and Associate Provost for Marine and Environmental Initiatives at Florida Atlantic University. In addition to administering the Harbor Branch Oceanographic Institute, she will work with all seven campuses of FAU.

The LAS Alumni Achievement Award is given to an alumnus or alumna who, by outstanding achievement, has demonstrated the values derived from a liberal arts and sciences education. Winners are selected by the Alumni Association board. In 2003, Leinen was also the recipient of the Department of Geology's Alumni Achievement Award.

## Threet Honored by U. of I, AAPG

**J**ack C. Threet (BS '51) was recognized by two institutions in the last year for his work as an exploration geologist and independent entrepreneur.

The University of Illinois honored Threet with the 2010 LAS Dean's Quadrangle Award. As the Distinguished Alumnus lecturer during the Department of Geology's fall colloquium, he presented "Musings of a 1951 Illini Geology Graduate- From Junior Stratigrapher to Head of Exploration: A 60-Year Look Back and a 60-Year Look Forward."

Threet has also been named the recipient of this year's L. Austin Weeks Memorial Medal from the AAPG Foundation. The Weeks Medal, created and named in honor of one of the most

generous benefactors of the Association, is presented annually by the Foundation in recognition of extraordinary philanthropy and service in advancing the mission of the AAPG Foundation. It is the Foundation's highest honor, and Threet now becomes the fourth recipient.

Threet is currently a president and CEO of Threet Energy, Inc., an independent oil and gas exploration company in Houston, Texas. After receiving his bachelor's degree in geology from the University of Illinois in 1951, Threet began a 36-year career with the Shell Oil Company, beginning as a junior stratigrapher in exploration department. Over the years, he held numerous positions of increasing responsibility in exploration and production, and

led discovery efforts in the deep water of the Gulf of Mexico, the northwest shelf of Australia, onshore Syria and offshore Malaysia, Cameroon and Brazil. During the last nine years of his time at Shell, he served as Vice President and Head of Exploration. He retired from Shell in 1987, and in 1989, he started his company and his career as an independent explorer.

Threet is an active member of the American Association of Petroleum Geologists and a trustee associate and chairman of the board of the AAPG Foundation. He is also a trustee of the American Geological Institute Foundation and past vice chairman of the Offshore Technology Conference.

## Goldman Honored with 2010 Alumni Achievement Award

**D**r. Charles R. Goldman (BA '52, MS '55) has been selected by faculty members to receive the 2010 Alumni Achievement Award, highlighting his lifetime accomplishments as a distinguished limnologist and oceanographer. Dr. Goldman's work as a scientist, instructor, and environmentalist encapsulate the Department of Geology's core missions of research, education, and public engagement.

Dr. Goldman has spent nearly four decades studying freshwater lakes, focusing predominantly on the biological, chemical, and physical interactions between surrounding watersheds and lakes. During his tenure as the director of the Tahoe Research Group, Dr. Goldman's sustained research on Lake Tahoe, and in particular his studies of its eutrophication, have led directly to engineering solutions and legal decisions that aim toward the conservation and protection of aquatic resources and wetlands.

"My colleagues often comment that Charles Goldman to limnology is what Walter Munk to oceanography", said Department Head Wang-Ping Chen.

In 1998, Dr. Goldman's research-social action efforts earned him the Albert Einstein World Award of Science, bestowed annually to a single individual by a council of eminent scientists which includes 25 Nobel laureates, and recognizing those who have accomplished scientific and technological achievements that have advanced scientific understanding and benefited humanity.

As an instructor, he developed the first courses in limnology and oceanography at the University of California at Davis, served as Chair of the Division of Environmental Studies from 1988-1992, and was founding Director of the Institute of Ecology, serving from 1966-1969 and again in 1990-92. During his 40-year tenure at UC Davis, he has mentored over a hundred graduate and postdoctoral students.

Dr. Goldman's most recent endeavors have brought him overseas to Lake Baikal in Russia, where he is working toward a better understanding of lake processes and measures to preserve the water quality of lakes. He remains a professor at UC Davis and the director of the Tahoe Research Group.

## Students and Faculty Named Excellent Instructors

**T**wenty two Department of Geology instructors were named to the University's List of Teachers Ranked as Excellent by Their Students for the spring, summer, and fall 2010 semesters.

Faculty and academic professional appearing on this list include Stephen Altaner, Alison Anders, Craig Bethke, Chu-Yung Chen, Bruce Fouke, Eileen Herrstrom, Tom Johnson, Hannes Leetaru, Ann Long, Steve Marshak, Michael Stewart, and Jonathan Tomkin.

Graduate students Samantha Dwyer, Carly Hill, Jessica Hinton, Matt Kyrias, Stephanie Mager, Eric Obrock, Mauricio Perillo, Eric Prokocki, Pragnyadipta Sen, and Karen Wong were named to the list for their work as teaching assistants in the Department.

Thirteen instructors received the highest ranking of "outstanding." Stephen Altaner (Geology 110, 333, 380), Steve Marshak (Geology 411, 512) and Stephanie Mager (Geology 100, 401, 411) all earned this ranking during both the spring and fall semesters. Craig Bethke, Matt Kyrias, Ann Long, Eric Prokocki, and Karen Wong also took top honors in the spring semester while Bruce Fouke, Carly Hill, Tom Johnson, Hannes Leetaru, and Eric Obrock earned this ranking in the fall semester.

Rankings are released every semester and are based on student evaluations maintained by the Teaching Excellence on the Illinois Campus.

## Local Field Trips Offer Valuable Learning Experiences

**T**he students of Professor Steve Altaner's Environmental Geology class don't have to go far to understand the role geology plays in understanding the impact of human activity on the surrounding environment. With trips to a local water treatment plant, a sanitary landfill, and a wind turbine—to name just a few—students get a chance to see classroom concepts in action.

"It is always an eye-opening and memorable experience to view million gallon tanks of drinking water," says Altaner, "Or to see the inflow to the sewage treatment plant, or a 50 ton landfill compaction vehicle. The massive dragline excavators (power shovel) at one site can move 200 tons of rock in one scoop, and at another, a coal furnace reaches the ~3,000°F."

In addition to the aforementioned sites, students travel through the semester to a sewage treatment plant, a reclaimed coal mine in Kickapoo State Park, a glacial moraine, a natural coal outcrop, a fossil fuel power plant, an active coal strip mine, a limestone quarry, an underground natural gas storage field, a carbon sequestration well, and a 150-foot wind turbine. Most of the trips occur during lab time but there are also all-day trips to a coal mine near Sullivan, Indiana and a rock quarry in Charleston, Illinois.

"The learning experiences on the tours are extremely valuable," says Altaner, "At the natural gas storage field and carbon sequestration well my students learn about the critical role that geologic formations play in keeping the natural gas or CO<sub>2</sub> underground, for example. At the glacial moraine and geologic outcrops of coal and glacial sediment, they learn about the geologic history of Illinois, which plays an extremely important role in environmental issues such as exploration for natural resources, waste disposal, acid mine drainage, and maximizing wind energy potential."

Students enthusiastically agree that the trips make for outstanding educational experiences. "It always makes learning easier when you can witness the real world implications of the class concepts," says one student, "To be able to do so locally just makes it that much better."

# Students explore rare rock formations during overseas trip

While plenty of college students headed south towards the sunny shores of Florida for their spring break, the students of Geology 415/515, along with their instructors Craig Lundstrom, Steve Hurst, and Michael Stewart found themselves in the historic mountain town of Kakopetria on the island of Cyprus.

Their destination was quite purposeful: Kakopetria is located in the heart of the Troodos mountains, a veritable geologic gem with a complete suite of exposed ophiolites – one of only two known cases in the entire world – just waiting to be studied. Funded in part by Shell Oil, the trip represented the practical application of classroom concepts in the real world and was the capstone to a series of lectures and laboratory preparations in Geology 415/515.

“The field course is run every year to give our students experience with seeing real rocks and geology in action,” says Lundstrom, “Besides providing access to some of the most spectacular geology in the world, they get to learn about doing field work in a foreign country and just experiencing life outside the US.”

The Troodos Ophiolite of Cyprus and the Semail Ophiolite of Oman are the most complete and studied ophiolites in the world, making Cyprus an ideal choice for this year’s trip. An ophiolite represents remnants of the oceanic crust and the mantle beneath it—essentially a slice of the oceanic lithosphere that was plastered onto a continent during convergence of tectonic plates. While ophiolites are common along ancient and active zones of convergence, the oceanic mantle was exposed only in Cyprus and Oman.

The choice of instructors is no accident either. Lundstrom, Stewart and Hurst are all very experienced in the study of the oceanic crust, including several deep-sea dives in the submarine Alvin by Hurst. In addition, Stephen Marshak (current Director of the School of Earth, Society and Environment) and Wang-Ping Chen (current Head of Department) added expertise in structural geology and rheology/global tectonics, respectively.

**Right:** Steve Marshak holding up notebook on the beach at Petra tou Rominou on day 1, stop 1. The outcrop is mixture of chalks, pillow lavas, ultramafic rocks and marbles.

**Below:** Students sitting on a basaltic dike swarm in Akaki Canyon. Day 2, Stop 2



Each day in the field was devoted to the thorough examination of the individual units that make up the complete ophiolite sequence, including deep-sea sediments, extrusive lavas (pillow lavas, sheet flows, and hyaloclastites), intrusive igneous dikes, gabbros, and peridotites. Students visited key outcrops that allowed them to view not only the rocks, but also the all-important contacts between them. To this end, Chen made Gigapan photographs for all to see on the world-wide web (<https://www.uiuc.edu/goto/pubs/GigaPanLinks.txt>). (Using a robot developed for the Mars Rover, hundreds of high-resolution photographs were taken systematically and then stitched together with special software to produce a panorama that gives both overview and fine details in an image pyramid.)

The stratigraphic completeness of the Troodos ophiolite made the trip an invaluable experience for faculty and students alike. “The rocks we saw here only occur in a few small areas on the planet,” says one student, “They are formed between

the ocean floor and several kilometers below Earth’s surface. This was an opportunity to see rocks that give us information about plate tectonics and the formation of Earth’s crust.”

In the weeks leading up to the trip, students were assigned an intensive study of the current scholarly literature regarding the formation and subsequent deformation of the oceanic lithosphere, specifically focusing on the studies of ophiolite and Cyprus. Throughout the semester, they also made several group presentations but the capstone of the class will actually occur after the trip, when students make a presentation that combines concepts and knowledge learned in the classroom and the first-hand observations and practical knowledge gained during their field work.

Lundstrom hopes to return to Cyprus with a future class. “We would like to do the trip again if able—there is a 4 year rotation of trips currently so if we do it again, it would be that far away,” he says, “But the trip was very successful and it should be easier to do the second time.”

## Harold Scott

by Ralph L. Langenheim

*Editor's Note: "Windows into the Past" is a regular feature of the Year in Review contributed by Professor Emeritus Ralph L. Langenheim. Ralph's writing represents a long-serving faculty member's recollections and his perspectives of the Department's past.*

Harold Scott left an autobiography of social, political and environmental commentary, *The Sugar Creek Saga: Chronicles of a Petroleum Geologist*, (1986, Cushing Malloy, Ann Arbor, Michigan). In it Scott presents his political and social ideas, a mixture of social Darwinism, very conservative politics and an analysis of global energy problems from the point of view of a successful petroleum explorationist. He also describes his evolution from an early twentieth century Iroquois County farm boy to a professor of geology.

Scott attended a one-room country school and the small rural Milford, Illinois high school before hitch-hiking to Urbana to enroll at the University of Illinois. He was attracted to geology by T. E. Savage, who became one of his mentors. He completed his AB in 1929, followed by an MS, under Arle Sutton, in 1931. He then transferred to the University of Chicago, completing his doctorate in 1935 under Carey Croneis. From 1933 to 1937 he was a staff member at the Montana School of Mines and a summer employee of the Montana Bureau of Mines and Geology. In 1937, Scott joined the faculty at Illinois, remaining until 1968 when he became Chairman of the Geology Department at Michigan State University, from which he retired in 1975.

While at Illinois, Scott taught Elementary Geology, Historical Geology, Paleontology, Micropaleontology, Principles of Stratigraphy, Paleozoic Stratigraphy, Mesozoic Stratigraphy, Structural Geology, Geomorphology and Physical Geography. He supervised fourteen Honors, fifty-five Masters and seventeen Ph.D. theses at Illinois. The largest number of these, thirty-eight at least, dealt with ostracodes. Fifteen concerned subsurface stratigraphy in the

Fingers Crossed? Let's drill this Baby! Cowpens Field Discovery Well. Harold Scott on right; investors: center and left.

Illinois Basin. Notable students include: William W. Hay, Robert J. Kesling, Alan Agnew, Doris Nodine Zeller, William Oliver, Howard Ross Cramer, Richard H. Benson, Robert and Ann Fox, James Fisher, Frank Lyons Salin, Mark Rich, Robert Lundin, Albert Guber and Norman F. Sohl. Hay, who was attracted to Illinois by Scott, later joined the Illinois faculty after completing his doctorate at Stanford. While here, he was instrumental in introducing electron microscopy to the university and the department. He had an extremely distinguished career in coccolithophorid paleontology and organized a prominent oceanographic research program. Frank Rhodes came from England to Illinois in 1950 as a Fulbright scholar studying conodont assemblages with Scott. He returned as a staff member before going back to the U.K., where he was a professor at Durham and head of the Geology at the University of Wales. He returned to the U.S. as a staff member at the University of Michigan, where he rose to Vice President of Academic Affairs. Finally, he served as President of Cornell University from 1977 to 1995. Rhodes gave Illinois' 1986 commencement address, during which he acknowledged his debt to Scott, George White and the Geology Department.

Scott's academic research was concentrated in micropaleontology, stratigraphy and petroleum geology. During his first field season in Montana he described the Big Snowy Group, recognizing its petroleum potential and discovering its conodont assemblages—probably his two most important research accomplishments. According to his account, his work on the Big Snowy Group brought petroleum exploration to the Williston Basin, a major economic advancement for the Northern Rockies. His discovery of conodont assemblages, synchronous with a German discovery, demonstrated that conodonts, those enigmatic, ultramicroscopic, tooth-like fossils, actually were parts of a larger animal



Photo courtesy of the University of Illinois Archives.

rather than remains of individual, separate species. In 1968, much later in his career, Scott conducted a major investigation of extremely rare (only eight specimens in tons of rock) impressions of soft bodied animals which enclosed conodont assemblages in their gut region. He and William Melton, who first found these fossils, considered them to be remains of the long sought "conodont animal." Their enthusiasm, however, was countered by many skeptics, including Samuel Ellison, a major conodont specialist who vigorously argued that Scott and Melton's fossils were remains of an animal that had fed on the elusive conodont animal. The controversy persisted for several years but was finally settled in the minds of most by a discovery in the Scottish Carboniferous of worm-like animals with conodont assemblages in their feeding orifice and by subsequent similar discoveries in rocks of other ages and in other localities. The consensus at present is that Scott's and Melton's fossils are remains of predators that fed on the "conodont animal."

Scott was the principal author, compiler and editor of the *Ostracode volume of the Treatise on Invertebrate Paleontology* and of *John Walker and His Lectures on Geology*. The latter is a reprint of Walker's lecture notes, which antedate Hutton's, *Theory of the Earth*. According to Scott, Walker's was the first university course to use the word, "geology." Scott also published 33 professional articles, 11 abstracts and five reviews of geological works. An additional two books, *Memorable Americans* (1984) and *More Memorable Americans* (1985), with University Librarian Robert Downs, were written for school children. In 1949 he was named an American Association of Petroleum Geologists Distinguished Lecturer, speaking on the Pennsylvanian Stratigraphy of the Rocky Mountains.

Scott left the Illinois geology department in 1968, variously styling his departure as a retirement or a resignation, and became Chairman of the Department of Geology at Michigan State. While at Michigan State he presided over substantial restructuring and expansion of the Geology Department, but retained his house and legal residence in Urbana.

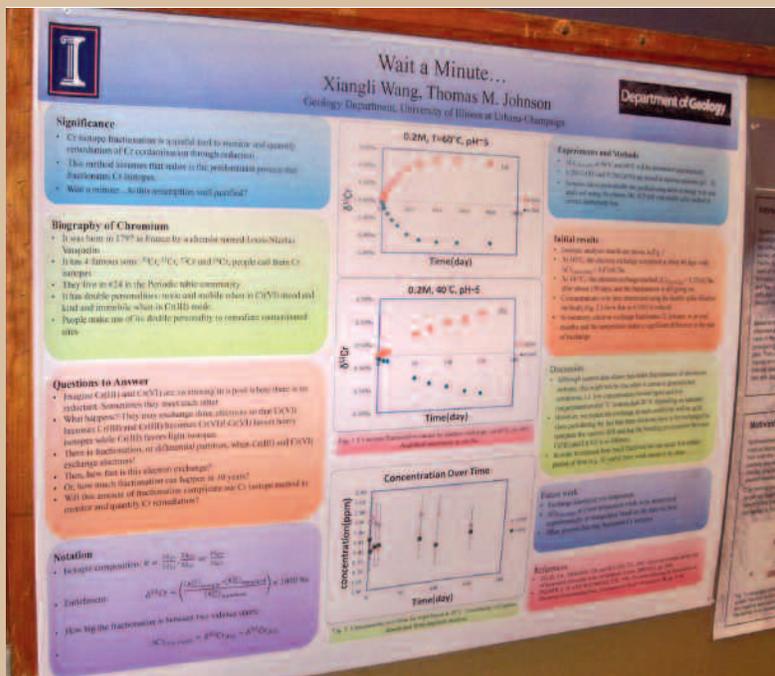
Scott's first geological employment was as a student summer-employee at the Illinois State Geological Survey. Later he was employed by the Gulf Oil Company and also worked as consultant to the Butte, Montana gas utility while at the Montana School of Mines. He continued independent commercial work for the remainder of his life, holding a 10% interest in the Harold Brown Oil Company from 1949 through most of his professional career, generating prospects, finding and leasing prospects, drilling for oil, managing production and organizing water-flood projects. He was active mostly in the Illinois Basin, but his efforts ranged widely from the Gulf Coast to the Williston Basin and from West Texas to Michigan. He introduced many of the undergraduate and graduate students that he hired to their careers as professional petroleum geologists. In the late 1940s through 1959 he was a participant in U. S. Yttrium, a rare earth mining and development venture, which went through a complex series of reorganizations and mergers before finally disbanding in the absence of a viable market for rare earth metals. In 1951 he organized Geological Services, Inc., which discovered the Cowpens Louisiana Oil Field. Intending to convert the Fishhook Gas Field, in Pike and Adams Counties, Illinois, to a gas storage reservoir, he formed the Fishhook Gas Company in 1961. Difficulty in obtaining cooperation of lease holders in the field and in finding a company willing to use the facility, led to sale of the project in 1967. From July 1954 to September 1955, Scott, on leave from Illinois, was Director of Foreign Operations for the Hunt International Oil Company,

serving in Libya, Egypt, Turkey, Greece, Italy, Pakistan and the islands of the Eastern Mediterranean. In Libya, he negotiated a concession for the Hunts and initiated and directed exploration leading to discovery of a 3.5 billion barrel oil field. His former student, Bob Fox, who did the field work and ultimately made the discovery, ran over a WWII mine while in the field. Blown up, injured, and left stranded in the desert, he was rescued only after his field-partner made a grueling escape on foot through the mine field. In Pakistan Scott found a large gas field. Although it could not be economically exploited at the

time, it is at present a major energy source for Pakistan. In spite of a generous salary, \$1,777 per month, and an invitation to remain in charge of Hunt's international efforts, Scott found permanent expatriate life unattractive and returned to the University Illinois and his "regular consulting work."

After returning from Michigan State, Scott continued lecturing and writing on diverse topics: the relationship of energy supplies, mostly oil, to the rise and continuation of modern civilization and the need to limit population growth to limits set by availability of energy supplies and other essential resources. .

## SESE 2011 Research Review Poster Contest



1st place winning poster in the 2011 Research Review Poster contest for Geology Division, Xiangli Wang's , "Wait a minute...Testing the Robustness of the Rayleigh Model Used in Monitoring the Remediation of Hexavalent Chromium Contamination in Groundwater Systems.

## 1950s

**John W. Shelton** (MS '51, PhD '53) was named the 2011 recipient of AAPG's highest honor, the Sidney Powers Medal and was recognized for his work as a scientist, consultant, map maker, data digitizer, and teacher at the opening session of the 2011 AAPG Annual Convention and Exhibition in Houston (see story for details).

**Jack C. Threet** (BS '51) is the recipient of this year's L. Austin Weeks Memorial Medal, given by the AAPG Foundation. Threet, an Honorary AAPG member and Foundation Trustee Associate, is president and CEO of Threet Energy. He previously had a 36-year career with Shell Oil, holding various executive positions in the United States, Netherlands, Australia and Canada. In addition, he received the 2010 LAS Dean's Quadrangle Award (see story for details).

**W. F. "Willy" Weeks** (BS '51, MS '53) recently published *On Sea Ice*, University of Alaska Press, 2010. Weeks is a geophysicist researching the ice covers of the polar oceans.

## 1960s

**Margaret Leinen** (BS '69) has accepted a new position as Executive Director of the Harbor Branch Oceanographic Institute, and Associate Provost for Marine and Environmental Initiatives at Florida Atlantic University. In addition to administering the Harbor Branch Oceanographic Institute, she will work with all seven campuses of FAU. She also received the 2010 LAS Alumni Achievement Award (see story for details).

**Suzanne Mahlburg Kay** (BS '69, MS '72) was elected an AGU Fellow this year.

## 1970s

**William I. Ausich** (BS '74), Director of the Orton Geological Museum at Ohio State University, has received the 2009-10 Harlan Hatcher Arts and Sciences Distinguished Faculty Award, which recognizes professors who "have truly exceptional records in teaching, research, scholarly/creative work, and service."

## 1980s

As part of the U.S. Army Engineer Research and Development Center (ERDC), **Charles Weiss** (MS '87, PhD '89) received a 2010 R&D 100 Award, which cele-

brate the top technology products and processes of 2010, for the development of corrosion-resistant vitreous enamel coating for bonding concrete to steel.

## 1990s

**Christine Clark** (McCracken) (MS '97), her husband Fred Corbett and son Jack, welcomed their daughter, Anna Christine Corbett, on August 5, 2010. Christine is an associate professor in the Department of Geography and Geology at Eastern Michigan University.

## 2000s

**Kurt Burmeister** (PhD '05) recently received tenure at the University of the Pacific in the Earth & Environmental Science department. He and his wife also welcomed a baby girl this past year.

**Andrew Ostendorf** (BS '10) was recently hired by Newmont Mining as a production geologist at the company's Leeville Underground Mine operation in northeastern Nevada.

## In Memorium

**Kyle Marshall Fagin** (BS '30) died on July 1, 2010 at the age of 101. During his illustrious career, he worked as the assistant chief engineer at Magnolia Petroleum (now ExxonMobil), served as the editor of The Petroleum Engineer magazine, and was the manager for oil and gas loans at Southwestern Life Insurance Company. In 1973, he became one of the founders and served as President of Fagin Associates International, Inc. which conducted numerous oil and gas studies in the U.S. and abroad. Marshall was a prominent member of the Texas oil and gas industry serving as President of Nomads, Petroleum Engineers Club and several other organizations.

**Philip P. Wolcott Sr.** (BS '35, MS '36), died on January 6, 2010 at the age of 96.

**Edmond G. Otton** (BS '39) died on April 25, 2010 at the age of 92. He was a ground-water geologist for the U.S. Geological Survey. He became an expert on the ground-water resources of the State of Maryland. He retired from the USGS in 1983 and traveled extensively with his wife.

**Meredith E. Ostrom** (MS '54, PhD '59) "Buzz" died on November 11, 2010 at the age 79. He was a geologist for the State of Wisconsin,

the director of the Wisconsin Geological and Natural History Survey, and a professor at the UW-Madison Department of Geology and Geophysics.

**Charles Tranter** (MS '54) died on November 16, 2010, at the age of 80. During his 39-year career with Mobil Oil Corporation, he was the exploration manager for the Denver and Texas divisions, where he was responsible for Mobil's exploration programs for the coast-to-coast and offshore northern U.S., Alaska, California, Texas, and New Mexico. During his last five years with Mobil, Charlie worked out of corporate offices in New York and Fairfax as the chief geologist for the company.

**William Paul Agster** (BS '57) died June 10, 2010 at the age of 74. William was a retired exploration geologist for Texaco.

**Allen Braumiller** (MS '57) died on January 29, 2010, at the age of 75. He was with Exxon for 12 years as a geologist and then Helmerich & Payne as Vice-President of exploration until his retirement. He opened his own company, Braumiller & Braumiller, Inc. where he was active until his death from complications of pneumonia. He was a 50-year member of AAPG, Tulsa Geological Society, and a director of the Petroleum Club.

**Thomas W. Smoot** (PhD '59) died Oct. 6, 2010 at the age of 77. A scientist and inventor, he was named on ten U.S. patents from 1963 to 2010, most recently for a fire-retardant material. He also owned a chemical manufacturing business until 2001.

**William Eldridge** (MS '61) died May 13, 2010 at the age of 81. He worked for Gulf Oil Corporation and retired from P&M Coal Company, a part of Chevron, in 1990.

**Richard Coon** (PhD '68) died on March 26, 2010. He was the principal geotechnical engineer for CH2M Hill for 27 years.

**Mark F. Hoffman** (BS '72) died on July 25, 2010 at the age of 61. He worked as a network manager for the Illinois State Treasurer's Office after working for IRS as a consultant for many years.

No further information available:

**Paul E. Schnurr** (BS '51)

## AROUND THE DEPARTMENT

The **Annual Research Review** was held at the Alice Campbell Alumni Center on February 25, 2011, highlighting research posters from all three departments in the School of Earth, Society and the Environment. The Department of Geology awarded Xiangli Wang first place for his poster, "Wait a minute... Testing the robustness of the Rayleigh model used in monitoring the remediation of hexavalent chromium contamination in groundwater systems." Parker Laubach's poster "Using  $^{238}\text{U}/^{235}\text{U}$  measurements to study uranium geochemical processes in groundwater contamination at the Rifle, Colorado UMTRA site" earned second place, while Julia Waldsmith took third place with her poster, "Trevertine deposits record the last flow of water within the Anio Novus aqueduct of ancient imperial Rome, Italy."

**Jay Bass** was appointed to the Board of Governors of the Consortium for Advanced Radiation Sources (CARS), 2010. Bass was also voted a member of the User Executive Committee for the National Synchrotron Light Source (Brookhaven Nat. Lab), 2010-2012.

**Jim Best** presented the 2010 Oualline Lecture at the Jackson School of Geosciences, University of Texas at Austin, "Flow and sedimentation in big rivers: confluences, bifurcations and bars – are large rivers different to small channels?" Best

also served as a guest editor for special journal issues of *Sedimentology* and *Earth Surface Processes and Landforms*.

**Wang-Ping Chen** presented the 2010 Birch Lecture, "Global Tectonics Ties Quakes, Rocks, and Volatiles in the Mantle Transition Zone," at the fall meeting of the American Geophysical Union in San Francisco. The Birch Lecture, named after Francis Birch who was a founding-father of modern geophysics, is part of the Bowie Lecture Series of the AGU. Chen's entire lecture is available online ([http://www.agu.org/meetings/fm10/lectures/lecture\\_videos/T34B.shtml](http://www.agu.org/meetings/fm10/lectures/lecture_videos/T34B.shtml)); and <http://www.agu.org/meetings/fm10/lectures/videos.php>).

**Bruce Fouke** received the 2011 Samuel von Pufendorf Visiting Research Fellowship in the Pufendorf Institute for Advanced Studies at Lund University in Sweden, in recognition of his geoscience and genome-enabled research on hot-springs, coral reefs and the deep subsurface biosphere. Lund University is one of Europe's foremost universities and Sweden's strongest in research.

**Susan Kieffer** was selected for the inaugural interview in the newsletter of the planetary geology section of the American Geophysical Union. The interview can be found online at the AGU website.

**George Devries Klein**, Professor Emeritus, has co-authored a book, *The hydrocarbon potential of Peru: Lima, Peru, BPZ Exploración & Producción*. Klein has also been elected to serve a three-year term to the House of Delegates of the American Association of Petroleum Geologists.

**Xiaodong Song** completed a three-year tenure as the Chair of the Global Seismic Network Standing Committee (GSNSC) of the Incorporated Research Institutions for Seismology (IRIS) Consortium in December 2010. The GSN runs over 150 stations and arrays in 69 nations with annual budget of \$3.5 millions. GSNSC is the oversight committee for GSN.

The work of two Geology Department researchers made the cover of *Nature* in 2010, accompanied by photos. **Pinaki Chakraborty's** work on the macroscopic effects of the spectral structure in turbulent flows was highlighted in June, and **Jonathan Tomkin's** research on glaciation as a destructive and constructive control on mountain building was featured in September.

**The Geology Library**, formerly located in the Natural History Building, permanently closed to the public on August 6, 2010. Materials housed in the Geology Library can now be found in several other units, including the Grainger Engineering Library, the Map and Geography Library, and the Oak Street Library Facility.

### Faculty

Stephen Altaner (Associate Professor)  
Alison Anders (Assistant Professor)  
Jay Bass (Ralph E. Grim Professor)  
Jim Best (Threet Professor)  
Craig Bethke (Ralph E. Grim Professor)  
Chu-Yung Chen (Associate Professor & Director of Educational Affairs for Geology, in the School of Earth, Society & Environment)  
Wang-Ping Chen (Professor and Head)  
Bruce Fouke (Professor)  
Tom Johnson (Associate Professor)  
Susan Kieffer (Walgreen Professor)  
Craig Lundstrom (Associate Professor)  
Steve Marshak (Professor & Director of the School of Earth, Society & Environment)  
Gary Parker (Johnson Professor)  
Xiaodong Song (Professor)

### Affiliate Faculty

Marcelo Garcia (Seiss Professor, Civil & Environ. Eng.)  
Feng Sheng Hu (Professor and Head of Department of Plant Biology)  
Bruce Rhoads (Professor and Head of Department of Geography)

### Research Staff, Post-Docs, Visiting Staff

Gianluca Blois (Post-Doctoral Research Associate)  
Pinaki Chakraborty (Research Assistant Professor)  
Yiran Dong (Post-Doctoral Research Associate)  
Eileen Herrstrom (Teaching Specialist)  
Stephen Hurst (Research Programmer/Geologist)  
Ann Long (Teaching Specialist)  
Jeffrey Nittroer (Post-Doctoral Research Associate)  
Daniel Saalfeld (Research Programmer)  
Rob Sanford (Senior Research Scientist)  
Michael Stewart (Lecturer)  
Jonathan Tomkin (Research Assistant Professor & Associate Director, School of Earth, Society, and Environment)  
Sharon Yeakel (Research Programmer)

### Adjunct Faculty

Ercan Alp  
Ken Christensen  
Przemek Dera  
Howard Falcon-Long  
Robert Finley  
Leon R. Follmer  
Hannes Leetaru  
William Shilts  
Wolfgang Sturhahn  
Charles Werth  
M. Scott Wilkerson

### Emeritus Faculty

Thomas F. Anderson  
Daniel B. Blake  
Albert V. Carozzi  
Donald L. Graf  
Arthur F. Hagner  
Albert T. Hsu  
George D. Klein  
Ralph Langenheim  
C. John Mann  
Alberto Nieto  
Philip Sandberg

### Department Staff

Marilyn Whalen (Office Administrator)  
Julie Dyar (Office Support Specialist)

### Library Staff

Lura Joseph (Geology Librarian)

### Graduate Students

Elizabeth Armstrong  
Gideon Bartov  
Anirban Basu  
Alex Bryk  
Ron Cash  
Jessica Colberg  
Samantha Dwyer  
Brian Farrell  
Val Finlayson  
Ted Flynn  
Carly Hill  
Jessica Hinton  
Jing Jin  
Marissa Kelly  
Xiaoxiao Li  
Stephanie Mager  
Philip Miller  
Eric Obrock  
Mauricio Perillo  
Eric W. Prokocki  
Liqin Sang  
Mary Seid  
Pragnyadipta Sen  
Sam Slaven  
Zheng Tang  
Doug Torbeck  
Xiangli Wang  
Zhen Xu  
Guimiao Zhang  
Jin Zhang  
Jessica Zinger

## Colloquium Speakers for Fall 2010 and Spring 2011

## Fall 2010

**August 27**

Thomas Johnson, Univ. of Illinois at Urbana-Champaign (Dept. of Geology)  
"Chromium Isotopes and the Fate of Chromium Contamination in Groundwater"

**September 3**

Hannes Leetaru, Illinois State Geological Survey  
"The Geology of the Mt. Simon Sandstone in Illinois and its Importance in Carbon Sequestration"

**September 10**

Jim Best, Univ. of Illinois at Urbana-Champaign (Dept. of Geology) "Bedforms in Watery Environments: Time for a Dirty Story?"

**September 17**

Saad Haq, Purdue University  
"Mechanics of Oblique Margins: Insights Using Quantified Analog Models"

**September 24**

Youssef Hashash, Univ. of Illinois at Urbana-Champaign (Dept. of Civil and Environmental Engineering)  
"Field Observations from the February Maule, Chile Earthquake"

**October 1**

Heather Watson, Northern Illinois University  
"Evolution of the Earth's Core: An Experimental Perspective"

**October 8**

Kevin Rosso, Pacific Northwest National Laboratory  
"Iron Biogeochemistry at Microscopic Scales: A Frontier in Environmental Geology"  
*The Buckley Lecture in Environmental Geology*

**October 15**

James Conder, Southern Illinois University  
"Nanoplates, Microseismicity, and Whales: Acoustics of the Central and Northern Lau Basin"

**October 22**

Jack Threet, (BSc '51)  
"Musings of a 1951 Illini Geology Graduate- From Junior Stratigrapher to Head of Exploration: A 60-Year Look Back and a 60-Year Look Forward"  
*2010 LAS Quadrangle Award Recipient and Distinguished Alumnus Lecturer*

**November 5**

Linda Warren, St. Louis University  
"Deep Earthquakes, Slab Deformation, and Subduction Forces"

**November 12**

Linda Elkins-Tanton, Massachusetts Institute of Technology  
"Building Rocky Planets: From Planetesimals to Ocean Worlds"  
*The R. E. Grim Lecture in Geology and Mineralogy*

## Spring 2011

**January 28**

Prof. Jim Ehleringer, Univ. of Utah  
"CSI: Crimes Solved with Stable Isotopes"  
*Isotech Laboratories Lecture in Isotope Geochemistry*

**February 4**

Stanley Ambrose, Univ. of Illinois at Urbana-Champaign (Dept. of Anthropology)  
"The Toba Supervolcano and the Evolution of Humans"

**February 11**

Frank Pazzaglia, Lehigh Univ.  
"Unsteady Uplift and Erosion of the Late Cenozoic Appalachians" and  
"Broadband Geodesy and Active Tectonics of the Northern Apennines, Italy"  
*R. James Kirkpatrick Lectures in Geology*

**February 18**

Brandon McElroy, U.S. Geological Survey  
"Not all Rates are Created Equally- Quantifying Variability in Topographic Evolution"

**March 4**

Michael Lamb, California Institute of Technology  
"Groundwater Sapping, Waterfall Erosion and the Formation of Bedrock Canyons on Earth and Mars"  
*W. Hilton Johnson Lecture in Geomorphology*

**March 14**

Dr. William Haneberg, Haneberg Geoscience  
"The Landslide that Ate Laprak"  
*The AEG Jahns Distinguished Lecture in Engineering Geology*

**April 1**

Hannes Brueckner, Lamont-Doherty Earth Observatory and Queens College, City University of New York  
"Subducting Continents: An Explanation for Deformation, Metamorphism and Melting in the Cores of Collisional Mountains."  
*The Richard Hay Lecture in Geology*

**April 8**

Mark Frank, Northern Illinois Univ.  
"Copper and Gold in Magmatic-Hydrothermal Systems"

**April 15**

D'Arcy Meyer-Dombard, Univ. of Illinois, Chicago  
"Investigations into Carbon and Nitrogen Cycling in Terrestrial Hydrothermal Systems"

**April 22**

Bill Dietrich, Univ. of California, Berkeley  
"Is There a Topographic Signature of Life?"  
*Threet Lecture in Sedimentary Geology*

**April 29**

Wang-Ping Chen, Univ. of Illinois at Urbana-Champaign (Dept. of Geology)  
"Tectonic Pathways & Petrological Causes of Seismic Anomalies, Deep Earthquakes, and Volatiles in the Mantle Transition Zone"

## Courses Taught in 2010-11

GEOL 100	Planet Earth
GEOL 101	Introductory Physical Geology
GEOL 103	Planet Earth QRIL
GEOL 104	Geology of the National Parks
GEOL 106	Extinction: Dinosaurs to Dodos
GEOL 107	Physical Geology
GEOL 110	Exploring Geology in the Field
GEOL 117	The Oceans
GEOL 118	Natural Disasters
GEOL 143	History of Life
GEOL 199	Undergraduate Open Seminar
GEOL 201	History of Geology
GEOL 208	History of the Earth System
GEOL 333	Earth Materials and the Env
GEOL 380	Environmental Geology
GEOL 390	Individual Study
GEOL 391	Individual Honors Study
GEOL 406	Fluvial Geomorphology
GEOL 411	Structural Geol and Tectonics
GEOL 415	Field Geology
GEOL 432	Mineralogy and Mineral Optics
GEOL 436	Petrology and Petrography
GEOL 440	Sedimentology and Stratigraphy
GEOL 451	Methods in Applied Geophysics
GEOL 454	Introduction to Seismology
GEOL 460	Geochemistry
GEOL 481	Earth Systems Modeling
GEOL 492	Senior Thesis
GEOL 493	Honors Senior Thesis
GEOL 497	Special Topics in Geology
	AB—Geomicrobiology & Geochemistry
	SK—Geological Fluid Dynamics
GEOL 511	Advanced Structural Geology
GEOL 515	Advanced Field Geology
GEOL 540	Petroleum Geology
GEOL 552	Geodynamics
GEOL 562	Isotope Geology
GEOL 563	Analytical Geochemistry
GEOL 575	Alluvial Boundary Layer Dynam
GEOL 591	Current Research in Geoscience
GEOL 593	Advanced Studies in Geology
GEOL 599	Thesis Research

## Research Grants Active in 2010

### AIR FORCE

- Wang-Ping Chen**—Frequency-dependent Characteristics of Regional Seismic Phases—Propagation of Pn in Western China
- Xiaodong Song**—Joint Inversion of Crustal and Uppermost Mantle Structure in Western China

### ARCADIS US

- Tom Johnson**—Stable Isotope Analysis

### ARGONNE NATIONAL LABS

- Jay Bass**—High-Resolution Inelastic X-ray Scattering at High P&T: A New Capability for the COMPRES Community
- Robert Sanford**—Growth of *Anaeromyxobacter* and Other Iron Reducing Bacteria

### BRITISH PETROLEUM/ENERGY BIOSCIENCES INSTITUTE

- Bruce Fouke**—Microbially Enhanced Hydrocarbon Recovery

### EXXON-MOBIL

- Jim Best**—The Sedimentology of Tidally-Influenced Fluvial Bars in High-energy River Systems: the Modern Columbia River

### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

- Susan Keiffer**—An Experimental Investigation of Conditions Conducive to Groove and Ridge Formation at Double-Layer-Ejecta (DLE) Craters on Mars
- Susan Keiffer**—Simulation of the Effects of Vent Geometry and Canopy Interactions on the Plumes and Deposits on Io: (UIUC part of a joint proposal with UT)
- Susan Keiffer**—Thermodynamics and Fluid Dynamics in Multicomponent Systems Relevant to Enceladus

### NATIONAL SCIENCE FOUNDATION

- Jay Bass**—Sound Velocities and Elasticity of Deep-Earth Materials at High Pressures and Temperatures
- Jay Bass**—Community Facilities and Infrastructure for High-Pressure Mineral Physics and Geosciences: COMPRES II
- Jay Bass**—Collaborative Research: High Pressure Calibration at High Temperatures in the Diamond Anvil Cell
- Jim Best**—Collaborative Research: A Field and Numerical Study of the Morphology, Flow, Sedimentary Processes, and Stability of Sand-Bed Fluvial Bifurcations
- Jim Best, Bruce Fouke, Marcelo Garcia, Gary Parker, and Bruce Rhoads**—Acquisition of a State-of-the-art, Shallow Water Multibeam Echo-sounding System at the University of Illinois at Urbana-Champaign (UIUC MBES)
- Jim Best and Bruce Rhoads**—Fluvial Dynamics of a Large-river Meander Cutoff
- Jim Best**—Morphodynamics of Complex Meander Bends on Large Rivers

- Jim Best, Ken Christenson, Joanna Austin, Greg Elliot, and Marcelo Garcia**—MRI: Development of a Large-Scale Refractive-Index Matched Flow Facility

- Wang-Ping Chen**—CSEDI Collaborative Research: A Study of Deep Subduction Integrating Broadband Seismology and Mineral Physics

- Wang-Ping Chen**—Collaborative Research: Imaging the Continental Lithosphere with Earthquake Sources

- Bruce Fouke**—Geobiology and the Emergence of Terraced Architecture during Carbonate Mineralization

- Bruce Fouke**—Integration of Expedition Yellowstone with Biocomplexity Studies at Mammoth Hot Springs

- Tom Johnson**—Collaborative Research: Chromium Isotopes as Redox Indicators—Oxidation and Isotopic Equilibration Experiments

- Craig Lundstrom**—Collaborative Research: Integrated Investigations of Isotopic Fractionation in Magmatic Systems

- Craig Lundstrom**—Collaborative Research: Investigating MORB Differentiation Through Non-traditional Stable Isotope Analyses

- Craig Lundstrom**—Collaborative Research: Probing Mantle Plumbing beneath Pacific Ridges through Study of the Lamont and Vance Seamount Chains

- Craig Lundstrom**—EAGER: Collaborative Investigations of Isotopic Fractionation by Thermal Diffusion and Thermal Migration

- Steve Marshak**—NSF Pre- Earthscope Workshop Proposal: Tectonic Targets for Earthscope in the Midcontinent

- Xiaodong Song**—Collaborative Research: Joint Inversion of Crust and Upper Mantle Structure in Central and Eastern Tibetan Plateau and its Margins

### PACIFIC NORTHWEST NATIONAL LABORATORY

- Craig Lundstrom**—Rifle IFRC Uranium Isotope Characterization

### U.S. DEPARTMENT OF ENERGY

- Jay Bass**—Aqueous Geochemistry at High Pressures and Temperature
- Tom Johnson**—Exploratory Research Mercury Stable Isotopes as Indicators of the Biogeochemical Cycling of Mercury
- Bruce Fouke, Robert Sanford, Steve Marshak**—Understanding the Impact of CO<sub>2</sub> Injection on the Subsurface Microbial Community in the Illinois Basin: Integrated Student Training in Geoscience and Geomicrobiology
- Hannes Leetaru and Bruce Fouke**—An Evaluation of the Carbon Sequestration Potential of the Cambro-Ordovician Strata of the Illinois and Michigan Basins

- Robert Sanford**—Field-Constrained Quantitative Model of the Origin of Microbial and Geochemical Zoning in a Confined Fresh-Water Aquifer (Renewal)

- Robert Sanford**—Understanding the Impact of CO<sub>2</sub> Injection on the Subsurface Microbial Community in an Illinois Basin CCS Reservoir: Integrated Student Training in Geoscience and Geomicrobiology

- J.H. Tomkin**—Center for Global Studies Course Development

### U.S. DEPARTMENT OF ENERGY ENVIRONMENTAL REMEDIATION PROGRAM

- Craig Lundstrom, Robert Sanford, and Tom Johnson**—U(VI) Reduction by *Anaeromyxobacter*: Design of Bioremediation
- Robert Sanford**—MURMoT: Design and Application of Microbial Uranium Reduction Monitoring Tools

### U.S. GEOLOGICAL SURVEY

- Craig Lundstrom**—Using <sup>235</sup>U/<sup>238</sup>U Analysis to Understand U Ore Deposit Formation at Redox Fronts
- Steve Marshak**—Architecture of Fold-Thrust Belt Structures along the Helderberg Escarpment in the Hudson Valley, New York

### UNIVERSITY OF BRIGHTON (UK) WITH UK NATURAL ENVIRONMENTAL RESEARCH COUNCIL

- Jim Best**—Dynamics and Deposits of Braid-Bars in the World's Largest Rivers: Morphology, Processes and Subsurface Sedimentology
- Jim Best**—Morphodynamics and Sedimentology of the Tidally-influenced Fluvial Zone (TIFZ)

### UNIVERSITY OF BIRMINGHAM (UK) WITH UK NATURAL ENVIRONMENTAL RESEARCH COUNCIL

- Jim Best**—Fluid Dynamics Across the Interface in Gravel-bed Rivers; Quantification and Numerical Modeling of Flow in the Hyporheic Zone

### UNIVERSITY OF DURHAM (UK) WITH UK NATURAL ENVIRONMENTAL RESEARCH COUNCIL

- Jim Best**—Development of a Combined Lagrangian / Eulerian Approach to Understand Coherent Flow Structures in Gravel-bed Rivers
- Jim Best**—How Does Aquatic Vegetation Modify the Kinematic & Geometric Characteristics of Coherent Flow Structures in Open Channels?
- Jim Best**—Bedform Related Macroturbulence: Topology and Kinematics

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### Bachelor of Science Degrees

#### August 2010

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Andrew Ostendorf  
Matthew Dziarski  
Erik VanDusen  
Jeff Oehlerking

#### December 2010

Diane Cheung  
Juan Contreras

#### May 2011

Adam Angel  
Scott Robert David  
Elizabeth Hart  
Kurt Hodges  
Ashley Howell  
Simileoluwa Oduyungbo  
Jenna Shelton  
Marcie Stout

### Master of Science Degrees

#### May 2011

Jessica Colberg, "Influence of Spatially Variable Precipitation on Passive Margin Escarpment Evolution"  
Samantha Dwyer, "Subsurface Dolomitization and Porosity Occlusion within Early to Middle Ordovician Strata of the Illinois Basin, USA"  
Phillip Miller, "Ultra-high-Resolution Paragenesis of the Cambrian-Age Mt. Simon Sandstone at a Burial Depth of 1.8-2.1 km, Illinois Basin, USA"

### Doctor of Philosophy Degrees

#### December 2010

Lili Gao, "Density, Magnetic Properties and Sound Velocities of Iron-Rich Materials at High Temperature and High Pressure"

### Geology Student—Special Honors

2011 Outstanding Undergrad Senior Award—*Norbert Gajos, Christopher Leisering*

2011 Estwing Award—*Lucas Gschwind*

2011 Harriet Wallace Award for Outstanding Woman Graduate—*Samantha Dwyer*

2009-2011 R. James Kirkpatrick Award for Outstanding Grad Research in Geology—*Samantha Dwyer, Mauricio Perrillo, Zhen Xu*

2011 Morris M. and Ada B. Leighton Memorial Graduate Student Research Award—*Eric Prokocki*

2011 Roscoe Jackson Graduate Student Research Award—*Marissa Kelly*

Fall 2010 Outstanding Teaching Assistant Award—*Samantha Dwyer*

Spring 2011 Outstanding Teaching Assistant Award—*Stephanie Mager*

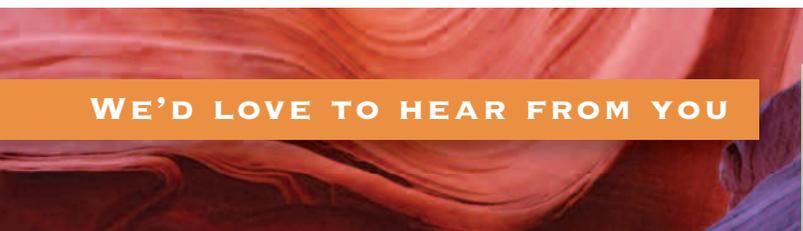
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