



Department of Geology

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Gary Parker Appointed as W. Hilton Johnson Professor

The Department of Geology is delighted to announce that Gary Parker will assume the title of the W. Hilton Johnson Professor of Geology beginning with the Fall, 2005 term. The Johnson Professorship was made possible through a generous endowment provided by Eric and Kathy Johnson, in memory of Eric's father Hilt Johnson, who was a much admired professor of geomorphology at the University of Illinois for many years. Prof. Parker describes himself as a "hybrid," a scientist with research passions in both geomorphology and civil engineering. In recognition, he will hold appointments both in the Department of Civil and Environmental Engineering (CEE) and the Department of Geology. He comes to the U of I from the University of Minnesota, where he was a professor and the Director of the St. Anthony Falls Laboratory.

This past January, during a break between delivering a Geology/CEE Joint Colloquium ("Effect of Post-Glacial Sea Level Rise on Large Rivers") and visiting Department of Geology faculty and staff, Parker explained how he blends geology and engineering.

"For me, the connection between the two disciplines has always been there. On my geology side I'm a geomorphologist. On my engineering side, I'm a river engineer. Those are just different words for very similar things. In my entire career the applied and the basic sides have always interacted strongly."

For example, Parker cites the dual role of engineering and geology in river restoration, one of his research specialties. "I will say that as time has progressed that, at least with surface process geologists, they used to disdain the idea



of prediction. They were not trained to do it. However, with all the recent interest in river restoration, where people actually have to predict what would make things better if we did this or that to a stream, I find that geomorphologists in general are becoming more predictive. So in a sense the differences between civil engineering and geology are ameliorating with time."

Parker's many research activities include: the computational study of downstream fining and floodplain deposition in large, low-slope sand-bed rivers; density stratification effects due to suspended sediment in rivers; and theoretical and experimental research on cyclic step formation in cohesive and noncohesive sediment. His research articles have appeared in many journals and popular magazines, including GSA Today, Journal of Glaciology, Science, and Nature. Teaching is also one of Parker's passions. "I love to teach," he says. He will be teaching four courses at Illinois.

While contemplating his next career move Parker said the U of I had exactly what he needed. "I do a fair amount of my research in a laboratory and one of the few universities around the country

that has a laboratory that can compete is here at the U of I with the Ven Te Chow Hydrosystems Laboratory. So, I am walking into an environment where certain things that I value and am already comfortable with are on the table. "

"Gary's appointment instantly puts the University of Illinois on the map both in fluvial geomorphology and in issues concerning sedimentary transport," says Department of Geology Head Steve Marshak. "He is absolutely one of the top researchers and teachers in these fields, and we are very proud to have him join the faculty as the W. Hilton Johnson Professor."

Civil Engineering Professor and Director of the Ven Te Chow Hydrosystems Laboratory (VTCHL) Marcelo Garcia, said Johnson's appointment is a like a homecoming. "Gary is a worldwide leader in his field but most important he is a continuous source of ideas and help to younger people. We are extremely fortunate for having him in our faculty. There is no question that he will provide an interdisciplinary bridge among our departments and throughout campus.

"On a different note, in the late 1980's, together with Gary Parker we published a paper in Science. As it turns out, Sue Kieffer, Walgreen Chair and Professor of Geology, was the person that handled the review process. At the time she was working on hydraulic jumps in the Grand Canyon of the Colorado River and our paper had to do with hydraulic jumps but in oceanic turbidity currents in submarine canyons many of which rival their sub-aerial relatives in size. Interestingly, we are all here now: Sue Kieffer, Gary Parker, and me. It does not get much better than this."



GREETINGS

Letter From The Head

Greetings from the Department of Geology! As always, many things happen during the course of a year, and it's hard to keep track of everything. The faculty continues to evolve. This year we will see the retirement of Prof. Albert Hsui after a quarter century of dedicated service to the Department and its students. Albert has been a kingpin in the geophysics curriculum, teaching a great range of courses ranging from Introductory Geology, the Geology of Planets, to Exploration Geophysics and Geodynamics, and all the time continuing research on flow in planetary interiors and related topics. Albert, you will be missed! We are fortunate to see a new faculty member arrive. Gary Parker, one of the world's leading researchers in fluvial geomorphology and sedimentary transport, will be joining the Department as the first W.H.

Johnson Professor. Gary will hold a joint appointment with the Department of Civil and Environmental Engineering, and thus will provide a key link between our department and the Engineering College. He will be setting up an incredible experimental apparatus for studying turbidity flows, among other problems, at the University's Hydrosystems Lab.

Our faculty and students continue to be recognized. Craig Bethke has been made a Fellow of the American Association for the Advancement of Science, Steve Altaner has won the two highest teaching awards on campus, and Joannah Metz is enjoying her year at Cambridge as a Gates Scholar.

This year also saw additional steps in the development of a School of Earth, Society, and Environment at UIUC. This

School, if it comes into existence, will be an alliance between the Departments of Geology, Geography, and Atmospheric Science on this campus. It will not only make Earth-related studies at UIUC (and thus the Geology Department) more visible, but can be an anchor for new interdisciplinary studies and majors. 2004 also saw us approach the end of the GeoScience 2005 endowment campaign. All signs are pointing to the success of the campaign in achieving its \$3 million goal—many thanks to the GeoThrust Committee, under the chairmanship of Bill Soderman, for their help with this endeavor.

I hope you enjoy this "Year in Review." Read on, to find out more about research, teaching, student activities, and alumni news. Please keep in touch!

Best regards,
—Stephen Marshak

Highlights

Geology Professor Wins University-Wide Teaching Honor

Congratulations to Associate Professor **Stephen P. Altaner** who was awarded this past year with the **College-Level and Campus-Level Awards for Excellence in Undergraduate Teaching**. Steve has been teaching popular courses in introductory geology, natural hazards, and environmental geology.

Rob Finley is New Adjunct Professor

Rob Finley has joined the Department as adjunct professor. Rob has been at the Illinois State Geological Survey (ISGS), Champaign, Illinois, since February, 2000, where he is Director of the Energy and Earth Resources Center. He works with state agency heads as part of the Governor's Energy Cabinet, developing energy market analyses from the perspective of a consuming state, and works on expanding ISGS' energy research programs.

Illinois Geology Students Return to Scotland!

For many years, in the 60's through the early '80s, the late Prof. Dennis Wood took students on legendary field trips to Scotland. (Rumor has it that it wasn't just the geology that was legendary.) In 2004, a group of Illinois geology once again journeyed to the "birthplace of geology," and spent two weeks with a class from the University of Leicester, studying

structure and petrology in Scotland. Highlights included the Moine thrust, the Isle of Skye, and rocky coast of Durness. To prepare for the trip, Prof. Steve Marshak organized a short seminar on the geology of the UK.

Sarah Brown, a graduate student in structure and tectonics, said, "The trip was wonderful. We saw a lot of amazing geology in a relatively short time. And working with a different set of teachers and students was enlightening."

Field Work and International Studies

Recent trips have taken Department of Geology students and faculty around the world and back again. For example, Prof. Bruce Fouke took students to Curaçao where they studied carbonate rocks and the geology of coral reefs. Prof. Wang-Ping Chen continued his seismological research high in Tibet, Prof. Sue Kieffer trekked to New Zealand to examine geothermal systems, Prof. Jay Bass worked at the mineral physics lab in Lyons, France, and Prof. Xiaodong Song collaborated with colleagues in China.

Seismology Briefs

Graduate student **Zhaohui Yang's** work was the topic of a report that appeared in *Science Times*, a weekly publication of the Chinese National Academy of Science in her homeland. The report highlighted her recent work on rheology of the continental lithosphere

that was published in June of 2004 in *Science*.

Undergraduate students **Nathan VanHoudnos** and **Trale Bardell** spent the summer working in the Himalayas and Tibet for Project Hi-CLIMB, a large-scale geophysical experiment directed by Dr. Wang-Ping Chen. The Research Experience supports both students for Undergraduates of the National Science Foundation.

The devastating earthquake and associated tsunami on December 26, 2004, impacted the lives of many at U of I. In response, the campus set up a special web site for this event, with a summary of scientific background on earthquakes and tsunami written by **Wang-Ping Chen**.

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

Department Head: Stephen Marshak
(smarshak@uiuc.edu)

Administrative Secretary: Barb Elmore
(belmore@uiuc.edu)

Editor: Stephen J. Lyons (sjlyons@uiuc.edu)
<http://www.geology.uiuc.edu>



Graduate Student on Her Way to the Big Easy

Red beans, rice and a plum Shell Oil Co. internship await Kelly Zimmerman this summer. The first-year graduate student from Camp Point, Illinois, whose area of study is carbonate sedimentology and stratigraphy, will spend 12 weeks this summer in New Orleans as a paid geology-based intern with the giant energy company. She found ample support throughout the interview process from both Shell and from the U of I.

“Every step of the interview process was laid out ahead of time,” Zimmerman said. “A lot of the interview had very non-traditional interview questions. They wanted to know about my experience here at U of I and they asked about my graduate studies. They also wanted to know personal accomplishments that I’ve achieved either through my geology coursework or outside of academia. I’ve worked at the Illinois State Geological Survey and Dot Foods Inc., so they wanted to know about some projects I managed.

“The only unknown I had was what the scenario question would be.”

The situational scenario question is an attempt by the company to determine how well a student can think on her feet. In Zimmerman’s case Shell asked how she would allocate resources in a college if she was a dean facing budget cuts.

“I think the company wants to see how you think on your feet and if you can think of all the angles of a problem or if you are simply going to proceed down only one path.

“They really emphasize that at Shell you might come in with a geology background but you’re going to be working with people with a chemistry background or an engineering background and they want to see if you can encompass the whole scope of the science industry.”

Zimmerman also had some questions of her own for Shell. “Even though I’m interested in working in the oil industry for a while after I graduate, I’d even-

tually like to move into renewables. Environmental geology really interests me. I wanted to know if I would be able to move through the company and change positions to end up on its renewable side. They have a very strong solar power area in California.

“I wanted to make sure that if I came in as a geologist in the oil field that there has been and would be future opportunities to switch over.”

Shell will expose Zimmerman to many different aspects of a geologist’s role in the exploration and recovery of oil. Her time in the bayou country will also include several days on an oil platform in the Gulf of Mexico. But the best part is still to come. As she noted the majority of Shell interns are offered full-time positions...after they graduate, of course.



Joannah Metz: A Gates Scholar

Joannah Metz (B.S. ‘04) was one of 31 U.S. students to receive the prestigious Gates Cambridge Scholarship, funded by an endowment from the Bill and Melinda Gates Foundation, in 2004. The award covers the full cost of studies at Cambridge University in England, as well as of travel and living expenses.

As an undergraduate at Illinois, Metz completed three majors (including geology), and gained research experience working with Prof. Bruce Fouke. As the accompanying letter shows, she is taking full advantage of her year in Cambridge.

Metz will return to the United States to pursue a doctorate in planetary science and geology at MIT. From there, she hopes to become an astronaut and eventually undertake fieldwork on Mars.

Letter from Cambridge

By Joannah Metz

Walking the hallowed streets of Cambridge as a graduate student at the University of Cambridge is a bit different from strolling along the streets of Champaign-Urbana; for one thing, the ‘new’ buildings in Cambridge are 500 years old. I love attending a university with so much history, where I can be inspired knowing that I’m attending lectures in rooms Newton and Darwin frequented. Partaking in such Cambridge traditions as rowing, spring balls, and formal halls has helped to give me the flavour of life in Cambridge.

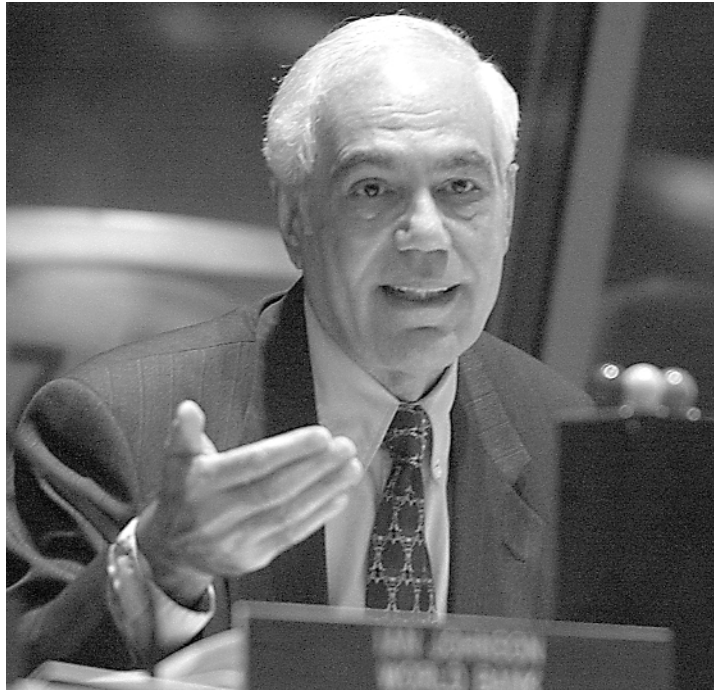
In more academic pursuits, I’m pursuing a one-year M.Phil in Polar Studies. My dissertation research involves looking at the glacier-influenced continental margins of the polar North Atlantic using various marine geophysical methods; and more specifically, I’m looking at iceberg scouring along the continental margins of Greenland, Iceland, and Labrador/Baffin Island. I’ve already learned so much about Earth’s polar regions from all of the knowledgeable researchers in my department, and I look forward to learning much more before I finish my course in June. I was also fortunate enough to be awarded the Gates Cambridge fellowship, which is funding my studies in Cambridge. There is a great community of Gates scholars and we have many interesting lectures by ambassadors, scientists, and foreign policy advisors as well as other opportunities such as trips which all help to broaden our experience at Cambridge.

This has been a fantastic year thus far, and one that has given me not only much knowledge about the coldest regions on Earth, but also has given me many friends and memories.

Mohamed El-Ashry Receives Alumni Achievement Award

We are very proud to announce that Dr. Mohamed El-Ashry, Ph.D. '66, is the 2004 Department of Geology Alumni Achievement Award winner. Dr. El-Ashry came to the University of Illinois from Cairo University, and completed his dissertation under the direction of Harold Wanless on the photointerpretation of coastal changes. Starting from this foundation, he gained vast experience over the years in many aspects of environmental geology. Specifically, he has focused on issues pertaining to water-resources issues and contamination due to mining. Ultimately, he applied his knowledge to addressing the environmental impacts of international development, and has held high-level posts in the diplomatic world. In the course of his career, he published over 200 articles and 3 books.

Currently, Dr. El-Ashry is a Senior Fellow at the United Nations Foundation. Prior to that appointment, he served as Chief Executive Officer of the Global Environment Facility (GEF). Under El-Ashry's leadership, from 1991 to 2003, GEF grew from a pilot program with less than 30 members to the largest single source of funding for the global environment with 173 member countries. The Global Environment Facility has allocated over \$15 billion for more than 1,000 projects in over 140 countries.



“The GEF, as we know it today, is the product of Mohamed El-Ashry’s vision, leadership, dedication, and hard work. He has made a significant contribution to the global environment and sustainable development.”

James D. Wolfensohn, President of the World Bank, said of El-Ashry's tenure at GEF: “The GEF, as we know it today, is the product of Mohamed El-Ashry's vision, leadership, dedication, and hard work. He has made a significant contribution to the global environment and sustainable development.”

El-Ashry came to the GEF from the World Bank, where he was the Chief Environmental Advisor to the President and Director of the Environment Department. Prior to joining the World Bank, he served as Senior Vice President of the World Resources Institute (WRI) and as Director of Environmental Quality with the Tennessee Valley Authority. In recent years, he has also held appointments as the Senior Environmental Adviser to the UNDP, a Special Adviser to the Secretary General of the 1992 U.N.

Conference on Environment and Development (UNCED), and as a member of the World Water Commission. Earlier in his career, he held teaching and research positions at Cairo University, Pan-Americas-U.A.R. Oil Company, the Illinois Geological Survey, Wilkes University, and the Environmental Defense Fund.

El-Ashry is a fellow of the Geological Society of America and the American Association for the Advancement of Science, and a member of the Third World and African Academies of Science. He is listed in “American Men and Women of Science” and “Men of Achievement,” and his biography has been featured in *Geotimes*. He is also the recipient of numerous international awards and honors.



Albert Hsui Retires



“I feel good when I run into alumni and they tell me that the things I taught them years ago are very useful and that they finally understand why they had to learn them. Those are the types of encounters that keep me going. You hope that you teach things that help your students be creative and productive.”

April 21, 2005, was declared “Albert Hsui Day” and the retiring professor of geology and associate head of the department presented a valedictory talk on “Geodynamics: Mother of All Geological Processes.” After his talk, Hsui was the guest at a dinner in his honor, during which his contributions since arriving at UIUC in 1980 were toasted. Hsui moved to the department after completing a Ph.D. at Cornell and a post-doc at MIT—when he arrived, the Department’s geophysics program was in transition.

Hsui is modest about his accomplishments. “I feel good when I run into alumni and they tell me that the things I taught them years ago are very useful and that they finally understand why they had to learn them. Those are the types of encounters that keep me going. You hope that you teach things that help your students be creative and productive.”

It was the lure of the supercomputers that initially brought Hsui to UIUC, because much of his research relies on computer simulation. Over the years, Hsui has made discoveries concerning mantle convection and its relationship to plate tectonics, the process of plate subduction and its implications to island-arc magma generation and deep seismicity, the evolution of map-view curves in trenches and mountain belts, and the thermal evolution of other planets. Hsui has investigated the constancy of the universal gravitational constant, which has implications to the possible existence of a fifth force of nature.

Teaching is a passion for Hsui, and increasingly, computers have been playing a role in his classes. “Today’s students are much more visual, so looking at equations alone is not something that they are accustomed to doing. They understand the meaning of an equation much better if you have them use a computer to simulate what the equation shows. For example, in my ‘Geology of the Planets’ class, we simulate the Moon orbiting the Earth, and show how the its orbital velocity relates to its distance from the Earth.”

Two years ago, Hsui developed a new introductory geology course that fulfills the university’s quantitative reasoning course requirement. To make this course possible, Hsui had to write a new lab book that gives students the opportunity to use math in the context of solving geological problems. Enrollment in this class has been growing steadily.

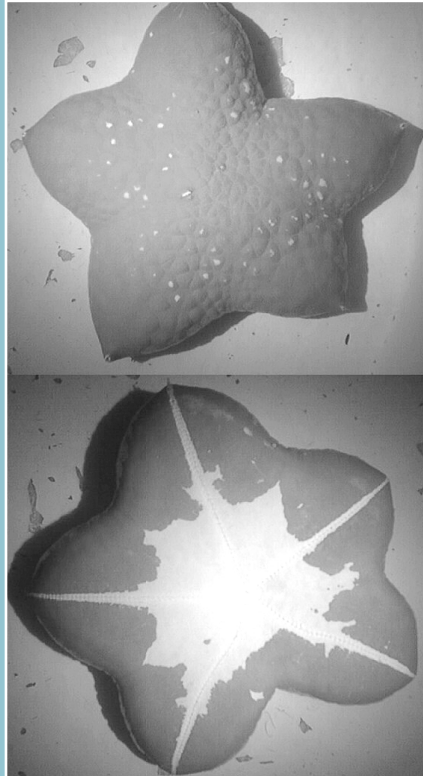
“Retired” just means moving on to the next endeavor, Hsui says. “After 25 years I feel that I’ve reached a juncture where if I want to do something different I better do it now, while I am still young and energetic.”

Deep Secret

Serendipity and good science lead to the discovery of a starfish living at the ocean's depths.

Geology graduate student Chris Mah's discovery of a new species of starfish reads like a good-old-fashioned detective story. The mystery began eight years ago off the coast of Palau in the 400-foot depths of the central Pacific, a place only "dive nuts" equipped with mixed gas re-breathing units dare to tread. It was in this murky realm, where, according to diver-scientist Patrick Colin, one finds "a world of white, blue, and black," where "sediment flows off the shallow reefs...like snowfall." Colin was collecting marine animals in the hopes of discovering new anticancer agents from nature. His dive permitted only six hours underwater and, with less than 10 minutes left before his air supply was exhausted, he surfaced with an orange and brown starfish that he later dubbed the "cornbread star."

Enter U of I paleobiologist and starfish researcher Mah, who studies the diversity and evolution of marine invertebrates. The drawers of his lab in the basement of the Natural History Building overflow with every imaginable shape and size of starfish, but none looked quite like the 40-cm example sent from Palau. Months after Mah received the sample, he was visiting the Bishop Museum in Honolulu and, by chance, just happened to notice a second specimen stored almost as an afterthought in a 5-gallon bucket that was holding up a fan. This specimen had been collected at Enewetak Atoll at 420 feet.



Astrosarkus idipi

"It was collected 15 years ago," Mah says. "Ironically, it was Colin who had collected that sample, too, but the opportunity to properly examine the specimen never emerged."

Several years later, Mah discovered a third sample of cornbread star on a dusty shelf in a Belgium marine lab. "It had just been sitting there for probably a decade, after it was collected from the Indian Ocean in 1982. With a critical mass of starfish material in hand I proceeded with a formal description."

Mah, whose research results were published last year in the *Bulletin of Marine Science*, named the starfish *Astrosarkus idipi*. *Astrosarkus* means "star-shaped flesh," and *idipi* is in honor of David K. Idipi, Sr., former director of the Palau Bureau of Natural Resources and Development. The naming was front-page news in the *Tia Belau*, the newspaper of record for Palau.

"The species represents something very distinct, and very new, and very different from previous known animals," Mah says. "It's a bizarre animal to put it mildly. It lives in a region just below conventional scuba dive range and in an area too deep and too jagged for trawler nets. That probably explains why it's never been discovered."

So much remains a mystery about *Astrosarkus idipi*. Mah still doesn't know what it eats or how old any of the specimens are. "Starfish can reabsorb calcite. They don't really show consistent growth patterns."

Presently there is a global effort at the moment to save and conserve biodiversity. Mah says many undescribed species remain to be found and each new species represents hope. "The question that comes out of this is, 'If we can still find an animal that big—pumpkin-sized—in the populated Tropics, then what else is there to be discovered?' You can't understand what's being lost if you don't know what's there in the first place."

Mah is finishing his Ph.D. in 2005, under the supervision of Prof. Emeritus Dan Blake.



Mount St. Helens: 25 years later

Twenty-five years ago, Mount St. Helens erupted in Washington state, prompting U. of I. geology graduate David Johnston, of the U.S. Geological Survey, to report “Vancouver, Vancouver, this is it” from inside his monitoring-station trailer. Johnston’s body and trailer were never found; he was among 57 fatalities that day.

“The neighbor asked what we had been doing recently, and when we replied ‘working at Mount St. Helens’ we were told, ‘Oh, it really blew up this morning!’” she recalled. “After recovering from the shock, we packed and headed back to the mountain that afternoon.”

Susan W. Kieffer, now the Charles R. Walgreen Jr. Chair in the U. of I. Geology Department, had been on site that March and April as part of a U.S. Geological Survey team studying earlier, smaller eruptions of the long dormant volcano. On the Sunday morning of May 18, 1980, Kieffer was visiting a neighbor in Flagstaff, Arizona.

“The neighbor asked what we had been doing recently, and when we replied ‘working at Mount St. Helens’ we were told, ‘Oh, it really blew up this morning!’” she recalled. “After recovering from the shock, we packed and headed back to the mountain that afternoon.”

An official observer, Johnston, who had earned a bachelor’s degree in geolo-

gy from Illinois in 1971, had been camped on a high ridge, about 10 kilometers north of the summit of Mount St. Helens. The ridge on which he died, shortly after 8:32 a.m., is now named Johnston Ridge, and is the site of a permanent Webcam that broadcasts images every five minutes of the mountain.

“The mountain today can look so peaceful on a sunny morning, but the knowledge of how violent it turned makes it a very uneasy peace, even though now it is a relatively safe place,” she said. “I had met David in the March-April work, and we enjoyed a tremendous comradeship. David was much more experienced with volcanoes than me, and because of his work with the explosive and dangerous Augustine Volcano in Alaska, he knew, and respected, the power of St. Helens probably more wisely than any of the rest of us.”

Today, scientists have a lot more understanding of what happened that day, and Kieffer currently is part of a team using supercomputers to further analyze what happened and why.

“At the time of the 1980 eruption, we didn’t have supercomputers,” Kieffer said.

“Now, we have not only the computational power for the models, but the visualization capabilities of the NCSA (National Center for Supercomputing Applications), and we’re hoping to really understand and visualize these events.”



Photo courtesy Susan Kieffer

Susan Kieffer at work in her helicopter flight suite on Mount St. Helens in 1980.

The expanding steam and gases in the magma during the 1980 Mount St. Helens eruption propelled fragmented rock and glaciers over 500 square kilometers of land, ripping up and destroying about 4 billion board feet of timber along the way, and causing nearly \$1 billion in economic damage.

“These eruptions have been described as ‘ash hurricanes,’ ” Kieffer said.

Kieffer mapped the directions of blow-down of the trees and reconstructed the dynamics of the blast using rocket-engine theory. She proposed that the flow within the most highly damaged area was moving so fast that gravitational forces couldn’t act to divert the flow of the “ash hurricane” down the valleys.

Kieffer is working with Illinois colleagues S. (Bala) Balachandar, professor and associate head of the department of theoretical and applied mechanics, and Andreas Haselbacher, a research scientist at the Center for Simulation of Advanced Rockets, to use supercomputing capabilities and the university’s Apple Turing Cluster computer to improve the understanding of the volcano’s eruption.

“At the time of the 1980 eruption, we didn’t have supercomputers,” Kieffer said. “Now, we have not only the computational power for the models, but the visualization capabilities of the NCSA (National Center for Supercomputing Applications), and we’re hoping to really understand and visualize these events.”

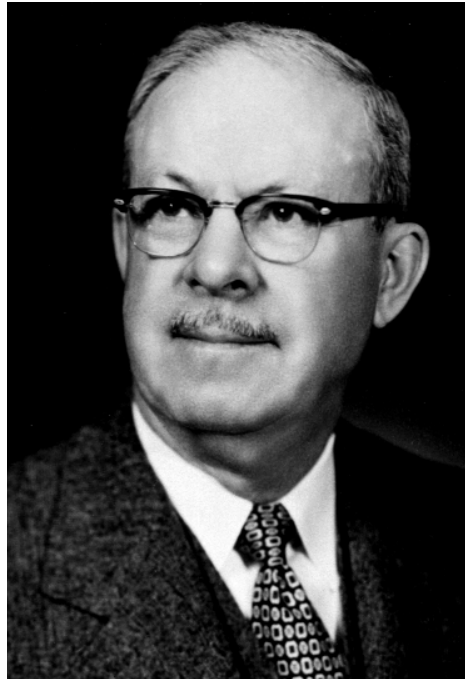
Doom, Boom, and War: Geology at Illinois 1931-1946

by Ralph L. Langenheim

Frank DeWolfe took over as head of the Department of Geology and Geography in 1931, at the height of the Great Depression. DeWolfe served until 1946 and held the Department together through the Depression, the New Deal, and World War II. He was the only department head to reach retirement in office. When he came to the University of Illinois, DeWolfe had a reputation as an outstanding explorationist and administrator. His resume included terms as Director of the ISGS (1911 to 1923), as Chief Geologist for the Humphreys Corporation (1923-1927), and as Vice President of the Louisiana State Lands Corporation. In Louisiana, he introduced seismic profiling, leading to the discovery of many salt domes.

DeWolfe entered a department in which intense feuds, some of a personal nature, divided the faculty. In 1936, an investigative committee chaired by the Dean of LAS reviewed the Department, suggested some staffing changes, and emphasized the need for stronger leadership and scholarship. As problems dissipated, enrollments grew and the department granted 53 masters and 21 doctorates between 1931 and 1946. World War II did take its toll—no degrees were granted in 1943 and 1944.

Staff and students of the mid-20th century concentrated overwhelmingly in sedimentary geology, and Illinois came to be known as a leading “soft-rock” department. For example, the record shows 23 theses in paleontology, 16 in



Frank DeWolfe

stratigraphy, 13 in sedimentology, 8 in marine geology, 5 in petroleum geology, 6 in coal geology, and 3 in subsurface geology. All other disciplines together yielded only 7 theses. The Department reached its highest-ever position (11th) in the American Council of Education’s ranking of graduate programs in geology.

In addition to DeWolfe, Terrence Quirke, Harold Wanless, Harold Scott, Waldorf Howard, Francis Shepard, and Arle Sutton formed the core of the Geology Department staff. Continuing activity on the part of emeritus professor Savage supplemented their efforts, and Carleton Chapman and Robert Sharp joined the staff before leaving for military duty. In addition, G.H. Cady, a distinguished coal geologist from the ISGS for

which GSA’s Cady Award was named, was appointed as an adjunct professor.

Shepard and Wanless developed wide reputations for research and teaching. Shepard helped found the study of submarine geology, and some of the students that he supervised at Illinois went on to achieve fame in their own right. These included Robert Dietz (Ph.D., 1941) and K.O. Emery (Ph.D., 1941). In 1937, though retaining his status as an Illinois faculty member, Shepard relocated to the Scripps Institution of Oceanography; he resigned from Illinois in 1946. Wanless began a lifetime of research on Late Paleozoic cyclothems and pioneered the use of aerial photographs in geologic mapping. He was also an extremely popular teacher—a course that he developed on the geology of Illinois became so popular, considering the state’s burgeoning petroleum industry, that its field trips required use of a bus. Quirke continued research in hard rock geology and began instruction in engineering geology, Howard led a research program in carbonate geology, Scott helped to establish conodont biostratigraphy as a major correlation tool, and Sutton made contributions in sedimentary and petroleum geology.

All in all, as the WW II came to a close, the Illinois geology department was ready to play a leading role in geologic research and education during the post-war period.



Structural Geologist Stephen Hurst Probes the Ocean Depths

Late last January, while most people were battling winter's cold and snow, structural geologist Stephen Hurst joined a team of scientists, engineers and technicians who set sail from Easter Island to explore the Pito Deep, a rift in Earth's crust nearly 6,000 meters deep.

Funded by the National Science Foundation, the expedition had as its goal to probe the ocean crust, and gain a better understanding of how it was created.

"Pito Deep is one of the few locations where such investigations can be made," Hurst said. "The rift is on the boundary between the Easter Island microplate and the Nazca plate, in an area where tectonic movement is pulling the crust apart."

Unlike rifts caused by sea-floor spreading, at Pito Deep there is no fresh magma obscuring the chasm. As a result, the crust is exposed like a split watermelon. The naturally occurring cross-section offers scientists an opportunity to study the structure of the ocean crust and how it formed.

Hurst rendezvoused with the rest of the scientific team on Easter Island. While awaiting final preparations, he had an opportunity to explore the quarry where most of the island's famous stone heads, or Moai, were carved.

"The quarry is spectacular," Hurst said. "There are approximately 300 Moai scattered throughout the quarry area, in various stages of completion. Some are 40 feet long."

When all was made ready, Hurst and the others boarded the Atlantis (host ship for the deep-sea submersible Alvin) and began the 24-hour cruise to Pito Deep, which is about 350 miles north and slightly east of Easter Island.

Having participated in six similar cruises, Hurst was involved with many technical operations of the expedition, from preparing bathymetric maps to analyzing photographs to diving in Alvin.

The floor of Pito Deep lies about 1,500 meters deeper than Alvin can safely dive, but this was not a problem for the researchers. "The bottoms of these canyons are usually filled with sediment and debris from rockslides," Hurst said. "For our studies, we wanted to collect rocks from the steepest, not the deepest, part of the chasm."

The descent takes nearly two hours. The pilot and two "observers" spend the time talking, listening to music or rechecking the equipment. During the dive, the water temperature falls from about 80 degrees Fahrenheit at the surface to close to freezing at depth. Separating the sub's occupants from the cold water is 2 inches of titanium hull, which also offers protection from the crushing pressure.

"Because of the enormous pressures we experience, it's not uncommon to find Alvin's hull festooned with net bags filled with Styrofoam cups and mannequin heads at the beginning of a dive," Hurst said. "The water pressure squeezes them to a tiny fraction of their original size, making neat souvenirs of the dive."



Photo courtesy Stephen Hurst

Geology Department's Stephen Hurst with the deep-sea submersible "Alvin."

The researchers have about five hours to explore the abyss and collect rock samples from the cliff face before Alvin's power runs low and they must float to the surface.

Although data analysis will take many months, Hurst said the expedition's preliminary results are positive.

"We discovered that Pito Deep has a sort of layer cake geology," Hurst said. "Like frosting on a cake, the top layer consists of horizontal lava flows. Beneath that is a layer of vertical dikes – the conduits through which the lava flowed. Beneath that is the now solid magma chamber at the base of the ocean crust. And beneath that lies the mantle."

Obituaries

Jack Pierce, B.S. '49, M.S. '50, retired chairman of the Department of Paleobiology of the Smithsonian Institution's National Museum of Natural History, and professor at George Washington University, died on February 11, 2004. He was 77 years old. Pierce served in the Pacific Theater in WWII. After the war, he attended the U of I, where he received his bachelor's and master's degrees. He received a Ph.D. from the University of Kansas. He then moved to George Washington University as a professor of sedimentology and marine geology. In 1965, Pierce began his tenure at the Smithsonian Institution's Museum of Natural History as a research scientist and curator. He founded the museum's sedimentology department. During the course of his career, Pierce conducted research in Argentina, Belize, Italy, Spain, France, and coastal South America. He was a member of the Sigma Xa, and a fellow of AAPG, SEPM, GSA, IAS, and GSW.

Frank Larry Doyle, Ph.D. '58, passed away on February 26, 2005, in San Antonio, Texas. A professional groundwater hydrologist with an internationally renowned career spanning more than 50 years, Larry served the U.S. Chapter of the International Association of Hydrologists from 1980 to 1988 as Secretary/Treasurer and Chairman. Larry began his career with the USGS in 1960 and worked in Arizona and Colorado. During his career he taught at St. Mary's University in San Antonio, the State University of New York, and the University of Connecticut in Storrs. Larry also had associations with the Geological Survey of Alabama, Dames and Moore, Metcalf and Eddy, the U.S. Nuclear Regulatory Commission, the U.S. Department of the Interior Office of Project Review, and the MITRE Corporation. He carried out geologic and hydrologic investigations in Panama, Nicaragua, Algeria, and Spain.

Bruce Dollahan, B.S. '59, passed away February 1, 2005, in Little Rock, Arkansas. Bruce retired from Sears in 1989 after 30 years of employment. He then worked for three years at Dillard's in Overland Park, Kansas. Among his survivors is his wife, college sweetheart Nora, who he wed in 1959.

1940s

Rob Roy Macgregor, B.S. '40, wrote from his home in Woodstock, Connecticut after reading the late Prof. Harold W. Scott's book, *The Sugar Creek Saga: Chronicles of a Petroleum Geologist*. Reminiscing, Rob writes that he took a job as a "shooter's helper" with the Carter Oil Company in Oklahoma. The company then transferred him to Mattoon, Illinois, to work as a clerk. "It became apparent to me that to get ahead in geology I would need a degree in it. Working in Mattoon provided me an opportunity to continue to work for Carter part time and to attend the U of I part time, taking enough geology courses to acquire a degree." Rob fondly remembers classmate Bernard Curvin (B.S. '39).

Howard L. Patton, B.S. '46, M.S. '48, wrote to the Department in which he remembered his friend and U of I colleague Jim Pearson ('42), who died in 1944 behind enemy lines during WWII. Howard writes, "I had the good fortune to be Jim's field partner, and our Spring course headquartered in the Rose Hotel in Elizabethtown [IL] on the Ohio has provided many pleasant memories. I rode his coattails then...Jim was personable, sensitive, meticulous, and thorough, and he always seemed to be in control of his studies when most of us were laboring mightily...He was a true hero and should be remembered as such by the Department of Geology."

1950s

At the 2005 AAPG Convention in Calgary **Jack Threet AB'51** was one of several AAPG members who was honored with a Distinguished Service Award recognizing their "singular and beneficial service to AAPG." Jack, whose long career included service as Vice President of Shell Oil, has received the Department's alumni achievement award.

Paul Karrow, Ph.D. '57, was awarded the title Distinguished Professor Emeritus by the University of Waterloo in 2002. He retired from UW in 1999. Presently, Paul is an adjunct professor in the Department of Earth Sciences and continues to teach and supervise graduate students. A day-long symposium was held at the Geological Association of Canada's annual meeting to recognize Paul's work in quaternary geology. Most importantly, Paul is now a grandfather of eight.

1960s

John Hawley, Ph.D. '62, now directs *Hawley Geomatters* in Albuquerque, New Mexico. He is the winner of a 2005 New Mexico Earth Science Achievement Award. The award recognizes individuals who have made outstanding contributions to advancing geoscience in areas of education, research, public service, and public policy in New Mexico.

Bill Soderman, M.S. '60, Ph.D. '62, received the 2004 U of I College of Liberal Arts and Sciences' "Quadrangle Award" in recognition of his many important contributions to the UIUC campus and for his efforts to help establish the GeoThrust Committee and for guiding it over many years. The award was presented at a lavish banquet hosted by the Dean of the College.

At the 2005 American Association of Petroleum Geologists (AAPG) Convention in Calgary **Christopher C. M. Heath, MS'63, Ph.D.'65**, was one of three recipients of the Honorary Membership Award. The award goes to those "who have distinguished themselves by their accomplishments and through their service to the petroleum profession."

For more than 30 years, **Douglas Mose, B.S. '65**, has been a professor of geochemistry at Virginia's George Mason University, where he directs the Center for Basic and Applied Science, a faculty-student research corporation. Douglas is also the president of an environmental (air-water-soil) testing company. He says, "I most fondly remember Harold Wanless for the goals he created in my mind when I listened during and after classes. I was fortunate to be his driver for one year on field trips and, in later years, I realized he became a model for me as a teacher and scientist." Mose earned his Ph.D. at University of Kansas.

1980s

The Geological Society of America elected **Kathleen Marsaglia, M.S. '82**, a GSA Fellow on April 25, 2004. Kathy is a professor at California State University, Northridge, where she teaches and carries out research in sandstone petrography and works on paleogeographic and paleotectonic reconstructions. She has been shipboard scientist on several ODP legs.

Linda Rowan, B.S. '86, is now at the American Geological Institute as Director of Government Affairs. She was a senior editor with the journal *Science*.

1990s

Catherine A. Hier Majumder, B.S. '97, finished her Ph.D. in computational geophysics at the University of Minnesota and then worked as a post-doc at Los Alamos National Lab. She is now beginning a post-doc at Carnegie, in Washington, D.C., where she will be working on projects pertaining to the NASA mission to Mercury.

Doug Tinkham, M.S., '97, will become an assistant professor at Laurentian University (Sudbury, Ontario) in the fall of 2005. Doug did his masters with Steve Marshak before completing a Ph.D. at Alabama and a post-doc at Calgary. Doug, Dee and their daughter Cydney Alicia will be moving at the end of the summer.



Crystal G. Lovett-Tibbs, B.S. '97, was hired last September as an associate attorney in Husch & Eppenberger, LLC, in the firm's Environmental & Regulatory Practice Group.

Joel Johnson, M.S. '98, will become an assistant professor at the University of New Hampshire. Joel did his master's with Steve Marshak before moving to Oregon State for a Ph.D. and a post-doc at the Monterey Bay Aquarium. Joel and his wife will be heading from the beaches of the West Coast to those of the East Coast this summer.

2000s

David Beedy, B.S. '00, M.S. '02, lives in Denver, Colorado, where he is a 9th grade advisor in the Mapleton School District.

Roberto Hernandez, M.S. '00, was promoted to the position of Chief Geologist at Ecopetrol, in Colombia. Roberto completed a thesis in structural geology while at UIUC.

Michael Brudzinski, Ph.D. '01, has accepted a position of assistant professor at Miami University of Ohio. He will begin his appointment in the fall of 2005. Mike worked with Wang-Ping Chen in seismology.

Qusheng Jin, Ph.D. '03, has accepted a position as an assistant professor at the University of Oregon. He and his wife Rose will move to Eugene for the Spring 2006 term. Jin worked with Craig Bethke in hydrogeology and geomicrobiology at UIUC, before becoming a post-doc at Berkeley.

News from Former Faculty

Emeritus professor **George Klein** was appointed Chairman of the Matson Award Committee for the 2006 annual meeting of the American Association of Petroleum Geologists (AAPG). In addition to his continuing work with SED-STRAT Geoscience Consultants, he has published a novel.

We'd love to hear from you



Send us your personal and professional updates by emailing us at geology@uiuc.edu or Department of Geology University of Illinois at Urbana-Champaign 245 Natural History Building 1301 W. Green St. Urbana, IL 61801

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

Buckley Lecture Series Launched

Glen and Susan Buckley have generously endowed a series of lectures in the Department. The Buckley Lecture Series will bring to our weekly colloquial series engaging speakers who will address a broad range of issue with an environmental-geology theme. The inaugural talk in the series will be by Glen Buckley, who will speak on water crises in Texas.

The following is a list of friends and alumni of the Department of Geology who have donated to the department during the calendar year 2004.

Prof. Thomas F. Anderson	Dr. and Mrs. Stuart Grossman	Mr. and Mrs. William A. Oesterling	Ms. Yuki J. Shinbori
Dr. Robert F. Babb II	Dr. Albert L. Guber	Dr. William A. Oliver Jr.	Dr. Charles H. Simonds
Mrs. Laura S. Bales	Mrs. Catherine L. Harms	Donald E. Orlopp	Dr. Brian J. Sinclair
Mrs. Margaret H. Bargh	Dr. Richard L. Hay	Michael R. Owen	Mr. Roger A. Sippel
Mr. Douglas S. Bates	Dr. Daniel O. Hayba	Dr. Norman J. Page	Dr. J. William Soderman
Dr. Craig M. Bethke	Dr. Mark A. Helper	Mrs. Corinne Pearson	Mr. and Mrs. Eric P. Sprouls
Dr. Marion E. Bickford	Mr. and Mrs. Mark F. Hoffman	Dr. and Mrs. Russel A. Peppers	Dr. Ian M. Steele
LTC Ronald E. Black (RET)	Mr. and Mrs. Glen A. Howard	Mr. Charles E. Pflum	Dr. Ronald D. Stieglitz
Mr. Joseph E. Boudreaux	Dr. Roscoe G. Jackson II	Mr. Bruce E. Phillips	Dr. John E. Stone
Mr. and Mrs. Allen S. Braumiller	Mr. Steven F. Jamrisko	Mrs. Beverly A. Pierce	Dr. Gary D. Stricker
Ms. Annette Brewster	Mr. Martin V. Jean	Dr. and Mrs. Robert I. Pinney	Mr. Thomas R. Styles
Ms. Margaret R. Broten	Dr. William D. Johns Jr.	Dr. Paul L. Plusquellec	Dr. Susan M. Taylor
Mr. and Mrs. Ross D. Brower	Dr. Allen H. Johnson	Mr. Raymond W. Rall	Dr. and Mrs. J. Cotter Tharin
The Reverend Robert L. Brownfield	Dr. Kenneth S. Johnson	Dr. Elizabeth P. Rall	Mr. and Mrs. Jack C. Threet
Dr. Susan B. Buckley	Mr. Robert R. Johnston	Mr. Paul J. Regorz	Dr. Edwin W. Tooker
Dr. Glenn R. Buckley	Mr. Roy A. Kaelin	Mr. William D. Rice	Dr. F. Michael Wahl
Mr. James W. Castle	Dr. Robert E. Karlin	Mr. Donald O. Rimsnider	Ms. Harriet E. Wallace
Dr. Thomas L. Chamberlin	Dr. and Mrs. Frank R. Karner	Mr. Dean M. Rose	Dr. James G. Ward
Dr. Charles J. Chantell	Mr. and Mrs. Donald A. Keefer	Mr. and Mrs. Edward L. Rosenthal	Dr. W. F. Weeks
Mr. and Mrs. Lester W. Clutter	Dr. John P. Kempton	Mr. Jeffrey A. Ross	Mr. Jack L. Wilber
Dr. Dennis D. Coleman	Mr. John N. Keys	Dr. Richard P. Sanders	Mr. Donald R. Williams
Dr. Lorence G. Collins	Dr. and Mrs. John D. Kiefer	Mr. Michael L. Sargent	Ms. Jennifer A. Wilson
Dr. Barbara J. Collins	Dr. and Mrs. R. James Kirkpatrick	Mr. and Mrs. Jay R. Scheevel	Mr. John J. Wilson
Mr. and Mrs. Randolph M. Collins	Mr. Robert F. Kraye	Dr. and Mrs. Detmar Schnitker	Mr. Matthew W. Woltman
Dr. Virginia A. Colten-Bradley	Mr. Thomas E. Krisa	Dr. David C. Schuster	Mr. Roland F. Wright
Mrs. Lucinda E. Cummins	Mr. Michael B. Lamport	Dr. and Mrs. Franklin W. Schwartz	Dr. Wang-Hong A. Yang
Dr. Norbert E. Cygan	Dr. Stephen E. Laubach		Dr. and Mrs. Valentine E. Zadnik
Dr. Richard N. Czerwinski	Dr. Steven W. Leavitt		
Dr. Ilham Demir	Mr. Stephen C. Lee		
Mr. M. Peter deVries	Dr. Hannes E. Leetaru		
Mr. Bruce E. Dollahan (DEC)	Dr. Morris W. Leighton		
Mr. James D. Donithan	Dr. Margaret S. Leinen		
Dr. Garnett M. Dow	Ms. Crystal Lovett-Tibbs		
Ms. Stephanie Drain	Mr. Bernard W. Lynch		
Dr. Mohamed T. El-Ashry	Mr. Rob Roy Macgregor		
Dr. Frank R. Etensohn	Mr. and Mrs. Andrew S. Madden		
Mr. Joseph P. Fagan Jr.	Mr. John W. Marks		
Mr. Kenneth T. Feldman	Prof. and Mrs. Stephen Marshak		
Dr. and Mrs. Ray E. Ferrell Jr.	Mrs. Joyce C. Mast		
Mr. and Mrs. Dale C. Finley Jr.	Dr. Murray R. McComas		
Mr. Gary M. Fleeger	Mrs. W. E. McCommons		
Dr. Richard M. Forester	Mrs. Cheryl B. Miller		
Mr. Jack D. Foster	Mr. James A. Miller		
Mr. Robert E. Fox	Ms. Linda A. Minor		
Mr. and Mrs. Edwin H. Franklin	Mr. John S. Moore		
Mr. Barry R. Gager	Mr. and Mrs. Wayne E. Moore		
Mr. James C. Gamble	Dr. Sharon Mosher		
Mr. and Mrs. John R. Garino	Mr. Joseph C. Mueller		
Ms. Theresa C. Gierlowski	Mr. Robert E. Murphy		
Mr. Robert N. Ginsburg	Dr. and Mrs. Haydn H. Murray		
Ms. Erika L. Goerich	Mr. Bruce W. Nelson		
Mr. and Mrs. Charles J. Gossett	Mr. W. John Nelson		
	Mr. and Mrs. Brian D. Noel		

Corporations

BP Amoco Foundation
 ChevronTexaco
 ConocoPhillips Corporation
 Dominion Foundation
 DTE Energy Foundation
 ExxonMobil Biomedical Sciences, Inc.
 ExxonMobil Foundation
 ExxonMobil Retiree Program Mobil Retiree
 Fidelity Charitable Gift Fund
 Harris Bank Foundation
 Idaho National Engineering and Environmental Laboratory
 Illini Technologists Working Metal
 Lockheed Martin Corporation Foundation
 Marathon Ashland Petroleum
 Shell Oil Company
 Shell Oil Company Foundation
 Whiting Petroleum Corporation an Alliant Company

Faculty

Stephen P. Altaner (Associate Professor)
 Jay D. Bass (Professor)
 Craig M. Bethke (Professor)
 Chu-Yung Chen (Associate Professor)
 Wang-Ping Chen (Professor)
 Bruce W. Fouke (Associate Professor)
 Albert T. Hsui (Professor)
 Thomas M. Johnson (Associate Professor)
 Susan W. Kieffer (Walgreen Professor)
 R. James Kirkpatrick (Professor and Executive Associate Dean)
 Jie Li (Assistant Professor)
 Craig C. Lundstrom (Assistant Professor)
 Stephen Marshak (Professor and Head)
 Xiaodong Song (Associate Professor)

Department Affiliate

Feng-Sheng Hu (Associate Professor)

Academic Staff, Post-Docs, Visiting Staff

George Bonheyo (Research Scientist)
 Jorge Frias-Lopez (Post-Doctoral Researcher)
 Justin Glessner (Geochemistry Specialist)
 Richard Hedin (Research Programmer)
 Holger Hellwig (Research Scientist)
 Eileen Herrstrom (Teaching Specialist)
 Xiaoqiang Hou (Post-Doctoral Researcher)
 Stephen Hurst (Research Programmer)
 Ingmar Janse (Post-Doctoral Researcher)
 Roy Johnson (Research Scientist)
 Andrey Kalinichev (Senior Research Scientist)
 Michael Lerche (Post-Doctoral Research Scientist)
 Ann Long (Teaching Lab Specialist)
 Xinli Lu (Post-Doctoral Researcher)
 Stephen Lyons (Newsletter Editor)
 Padma Padmanabhan (Post-Doctoral Researcher)
 Maik Pertermann (Post-Doctoral Researcher)
 Marc Reinholdt (Post-Doctoral Researcher)
 Bidhan Roy (Post-Doctoral Researcher)
 Carmen Sanchez-Valle (Post-Doctoral Researcher)
 Rob Sanford (Senior Research Scientist)
 Stanislav Sinogeikin (Research Scientist)
 Maoshuang Song (Post-Doctoral Researcher)
 Michael Stewart (Lecturer)
 Raj Vanka (Resource and Policy Analyst)
 Carine Vanpeteghem (Post-Doctoral Researcher)
 Jianwei Wang (Post-Doctoral Researcher)
 Zhaofeng Zhang (Visiting Scholar)
 Jianming Zhu (Visiting Scholar)

Emeritus Faculty

Thomas F. Anderson
 Daniel B. Blake
 Albert V. Carozzi
 Donald L. Graf
 Arthur F. Hagner
 Richard L. Hay
 Donald M. Henderson
 George deV. Klein
 Ralph L. Langenheim
 C. John Mann
 Alberto S. Nieto
 Philip A. Sandberg

Adjunct Faculty

Robert J. Finley
 Leon R. Follmer
 Dennis Kolata
 Morris W. Leighton
 Hannes Leetaru
 William Shilts
 Wolfgang Sturhahn
 M. Scott Wilkerson

Library Staff

Lura Joseph (Librarian)
 Sheila McGowan (Chief Library Clerk)
 Diana Walter (Library Technical Specialist)

Staff

Shelley Campbell (Staff Clerk)
 Barb Elmore (Administrative Secretary)
 Eddie Lane (Electronics Engineering Assistant)
 Michael Sczerba (Clerk)

Graduate Students

Min Jeoung Bae	Dmitry Lakshantov
Peter Berger	Qiang Li
Emily Berna	Yingchun Li
Nicole Bettinardi	Christopher Mah
Jon Brenizer	Jorge Marino
Sarah Brown	Lei Meng
Kurtis Burmeister	Brent Olson
Bin Chen	Jungho Park
Scott Clark	George Roadcap
Melissa Farmer	Tom Schickel
Theodore Flynn	Xinlei Sun
Lili Gao	Jian Tian
Alex Glass	Lisa Tranel
Chris Henderson	Tai-Lin Tseng
Fang Huang	Jianwei Wang
Jennifer Jackson	Jingyun Wang
Matthew Kirk	Xiang Xu
Jacquelyn Kitchen	Zhaohui Yang
James Klaus	Kelly Zimmerman
Man Jae Kwon	

COURSES TAUGHT IN 2004

Geol 100	Planet Earth
Geol 101	Introduction to Physical Geology
Geol 103	Planet Earth (QR II)
Geol 104	Geology of the National Parks and Monuments
Geol 107	Physical Geology
Geol 108	Historical Geology
Geol 110	Exploring Planet Earth in the Field
Geol 116	Geology of the Planets
Geol 117	The Oceans
Geol 118	Natural Disasters
Geol 143	History of Life
Geol 233	Earth Materials and the Environment
Geol 250	Geology for Engineers
Geol 280	Environmental Geology
Geol 301	Geomorphology
Geol 411	Structural Geology and Tectonics
Geol 317	Geologic Field Methods, Western United States (Field Camp)
Geol 432	Mineralogy and Mineral Optics
Geol 336	Petrology and Petrography
Geol 340	Sedimentology and Stratigraphy
Geol 452	Introduction to Geophysics
Geol 351	Geophysical Methods for Geology, Engineering, and Environmental Sciences
Geol 470-	Introduction to Groundwater
Geol 360	Geochemistry
Geol 397A1	The Challenge of a Sustainable Earth System
Geol 397C	Paleobotany
Geol 455	Hydrogeology
Geol 481	Modeling Earth and Environmental Systems
Geol 489	Geotectonics
Geol 531	Structural Mineralogy
Geol 591	Current Research in Geoscience
Geol 493F1	Environmental Microbiology
Geol 493K11	Experimental Simulation of Earth's Interior
Geol 493R2	Data Analysis in Geosciences
Geol 593K1	Continental Lithosphere



Center for Advanced Cement-Based Materials

R. James Kirkpatrick—Pore Solution-Solid Interactions in Cement Paste: Molecular Modeling of Fluids in Nanospaces

Department of Energy

Jay D. Bass—Consortium for Material Property Research in the Earth Sciences.

Craig M. Bethke—Field-Constrained Quantitative Model of the Origin of Microbial and Geochemical Zoning in a Confined Fresh-Water Aquifer.

R. James Kirkpatrick—Computational & Spectroscopic Investigations of Water-Carbon Dioxide Fluids & Surface Sorption Processes.

Robert A. Sanford—Towards a More Complete Picture: Dissimilatory Metal Reduction by Anaerobacter Species

Michigan State University

Robert A. Sanford—Growth of Chlororespiring Bacteria to High Cell Densities for Use in Bioaugmentation

NASA

Susan W. Kieffer—Multicomponent, Multiphase H₂O-CO₂ Thermodynamics and Fluid Dynamics on Mars

National Science Foundation

Jay D. Bass—Development of Laser Heating for Sound Velocity Measurements at High P & T.

Jay D. Bass—Sound Velocities & Elastic Moduli of Minerals Mantle Pressures and Temperatures with Laser Heating.

Jay D. Bass—Workshop on Phase Transitions and Mantle Discontinuities.

Jay D. Bass—CSEDI: Collaborative Research: Composition and Seismic Structure of the Mantle Transition Zone.

Jay D. Bass—Consortium for Material Property Research in the Earth Sciences.

Jay D. Bass—Collaborative Research: Elasticity Grand Challenge of the COMPRES Initiative.

Jay D. Bass—Polymorphism and Structural Transitions During Glass Formation.

Daniel B. Blake—Global Climate Change & The Evolutionary Ecology of Antarctic Mollusks in the Late Eocene.

Wang-Ping Chen—Collaborative Research: Lithospheric-Scale Dynamics of Active Mountain Building along the Himalayan-Tibetan Collision Zone.

Bruce W. Fouke—Geobiological and the Emergence of Terraced Architecture during Carbonate Mineralization.

Thomas M. Johnson—Collaborative Research: Field Investigation of SE Oxyanion Reduction & Se Sources in Wetlands: Application of Se Isotopes.

Thomas M. Johnson—Quantification of Cr Reduction in Groundwater Using Cr Stable Isotopes.

Thomas M. Johnson and Craig C. Lundstrom—Acquisition of Multicollector Inductively Coupled Plasma Mass Spectrometer.

Thomas M. Johnson and Craig C. Lundstrom—Technical Support for the New MC-ICP-MS Laboratory at University of Illinois at Urbana-Champaign

Jie Li—Experimental Investigations of Solid-Liquid Boundary in the Earth Core.

Craig C. Lundstrom—Observational Constraints on Melt-Rock Reactions during Melting of the Upper Mantle.

Craig C. Lundstrom—Collaborative Research: Investigating the Processes and Timescales of Andesite Differentiation: A Comprehensive Petrological and Geochemical Study of Arenal Volcano, Costa Rica.

Stephen Marshak—Collaborative Research: Emplacement of the Ferrar Mafic Igneous Province: A Pilot Study of Intrusive Architecture and Flow Directions in Southern Victoria Land.

Xiaodong Song—Structure and Dynamics of Earth's Core and Lowermost Mantle.

Xiaodong Song—CSEDI Collaborative Research: Observational and Theoretical Constraints on the Structure and Rotation of the Inner Core.

Xiaodong Song—Probing the Earth's Core and Lowermost Mantle

Office of Naval Research

Bruce W. Fouke—The Role of Shipyard Pollutants in Structuring Coral Reef Microbial Communities: Monitoring Environmental Change and the Potential Causes of Coral Disease.

University of Illinois Research Board

Wang-Ping Chen—Anatomy of a Continental Collision Zone: Exploring New Views in Seismic Imaging.

Albert Hsui—Poloidal-Toroidal Energy Partition and Rotation of Surface Plates on Earth.

R. James Kirkpatrick—A Large Volume NMR Sample Probe for Chemical and Geochemical Research

Xiaodong Song—Acquisition of Portable Broadband Digital Seismometers

U.S. Department of Interior / U.S. Geological Survey

Stephen Marshak—Geologic Mapping of the Rosendale Natural Cement Region, a Portion of the Northern Appalachian Fold-Thrust Belt, Ulster County, New York.

Degrees Conferred in 2004

Bachelor of Science Degrees

May

Roger A. Bannister
Michelle Ann Cox
Kellie Lee Eaker
Joannah Marie Metz
Charles R. Mitsdarfer
Leslie Nicole Savage
Michael S. Schwartz
Michael Patrick Welch
Kelly Marie Zimmerman

August

Charles Schlesinger

December

Benjamin R. Escutia
David J. Kim

Master of Science Degrees

May

Brent V. Olson—(Craig Bethke)

Eric R. Sikora—*Fractionation of Chromium Isotopes by Microbial Cr(VI) Reduction*, (Thomas Johnson)

Jingyun Wang—*Elastic Properties of Hydrous Ringwoodite at Ambient and High-Pressure Conditions*, (Jay Bass)

August

Matthew F. Kirk—*Bacterial Sulfate Reduction Limits Arsenic Concentration in Groundwater from a Glacial Aquifer System*, (Craig Bethke)

Xiang Xu—*NMR Investigation of Cs+ and Cl- Complexation with Suwannee River Natural Organic Matter*, (James Kirkpatrick)

Doctor of Philosophy Degrees

May

George S. Roadcap—*Geochemistry and Microbiology of Extremely Alkaline (PH > 12) Ground Water in the Calumet Slag-Fill Aquifer*, (Craig Bethke)

Jianwei Wang—*Molecular Structure, Diffusion Dynamics and Hydration Energetics of Nano-Confined Water and Water at Mineral Surfaces*, (R. James Kirkpatrick)

LIST OF PUBLICATIONS FOR 2004

- Johnson, T.M., 2004, A review of mass-dependent fractionation of selenium isotopes and implications for other heavy stable isotopes. *Chemical Geology*: 204: 201-214.
- Daniel, I., Bass, J.D., Fiquet, G., Cardon, H., Zhang, J.Z., Hanfland, M., 2004, Effect of aluminum on the compressibility of silicate perovskite. *Geophys. Res. Lett.*: 31: Art. No. L15608.
- Cygan, R.T., Liang, J.-J., and Kalinichev, A.G., 2004, Molecular models of hydroxide, oxyhydroxide, and clay phases and the development of a general force field. *J. Physical Chemistry*: B, 108: 1255-1266.
- Li, J., Struzhkin, V.V., Mao, H.K., Shu, J., Hemley, R.J., Fei, Y., Mysen, B., Dera, P., Prakapenka, V., and Shen, G., 2004, Electronic spin state of iron in lower mantle perovskite. *P. Natl. Acad. Sci. USA*: 101(39): 14027-14030.
- Kirk, M.F., Holm, T.R., Park, J., Jin, Q., Sanford, R.A., Fouke, B.W., and Bethke, C.M., 2004, Bacterial sulfate reduction limits natural arsenic contamination of groundwater. *Geology*: 32: 953956.
- Kim, Y., and Kirkpatrick, R. J., 2004, ³¹P NMR investigation of phosphate adsorbed on high-surface-area Al-oxyhydroxide phases. *Euro. J. Soil Science*: 55: 243-251.
- Chen, W.-P., 2004, What's so special about the Himalayas? *Lets Go India and Nepal*: 794.
- Dong, F.D., Riahi, N., & Hsui, A.T., 2004, On similarity waves in compacting media. (in) *Horizons in World Physics*: 244: 45-82, Nova Science Publishers, Inc., New York.
- Stevens, M. M., Andrews, A.H., Cailliet, G.M., Coale, K.H., and Lundstrom, C.C., 2004, Radiometric validation of age, growth, and longevity for the blackgill rockfish (*Sebastes melanostomus*). *Fisheries Bulletin*: 102: 711-722.
- Nicholas, J., Sinogeikin, S.V., Kieffer, J., Bass, J.D., 2004, A high pressure Brillouin scattering study of vitreous boron oxide up to 57 GPa. *J. Non-Crystalline Solids*, 349: 30-34.
- Frias-Lopez, J., Klaus, J., Bonheyo, G.T., and Fouke, B.W., 2004, The bacterial community associated with black band disease in corals. *Applied and Environmental Microbiology*: 70: 5055-5062.
- Keune, W., Ruckert, T., Sahoo, B., Sturhahn, W., Toellner, T.S., Alp, E.E., and Rohlsberger, R., 2004, Atomic vibrational density of states in crystalline and amorphous Tb_{1-x}Fe_x alloy thin films studied by nuclear resonant inelastic x-ray scattering (NRIXS). *J.Phys.: Condens. Matter*: 16: S397.
- Johnson, T.M. and Bullen, T.D., 2004, Mass-dependent fractionation of selenium and chromium isotopes in low-temperature environments. (in) *Geochemistry of Non-Traditional Stable Isotopes. Rev. Mineral*: 55: Mineral. Soc. Amer., Washington, D.C., 289-317.
- Foit, F.F., Gavin, D.G., and Hu, F.S., 2004, The tephra stratigraphy of two lakes in south-central British Columbia, Canada and its implications for the mid-late Holocene volcanic activity at Glacier Peak and Mount St. Helens, Washington, USA. *Canadian Journal of Earth Sciences*: 41: 1401-1410.
- Tinkham, D.K., and Marshak, S., 2004, Precambrian dome-and-keel structure in the Penokean orogen near Republic, Upper Peninsula of Michigan: (in) *Gneiss Domes in Orogeny: Geological Society of America Special Paper*: 380: 321-338.
- Kieffer, S.W., 2004, From Yellowstone to Titan, with sidetrips to Mars, Io, Mount St. Helens and Triton. (in) *Volcanic Worlds, 207-231*, Praxis Press, London.
- Jackson, J.M., Sinogeikin, S.V., Carpenter, M.A., Bass, J.D., 2004, Novel phase transition in orthoenstatite. *American Mineralogist*: 89: 239-245.
- Janse, I., Kardinaal, W.E.A., Meima, M., Snoek, J., Zwart, G., Fastner, J., Visser, P., 2004, Toxic and nontoxic *Microcystis* colonies in natural populations can be differentiated on the basis of rRNA-internal transcribed spacer gene diversity. *Applied and Environmental Microbiology*: 70(7): 3979-3987.
- Chen, W.-P., and Chen, C.-Y., 2004, Seismogenic structures along continental convergent zones: from oblique subduction to mature collision. *Tectonophysics*: 385: 105-120.
- Wang, J., Kalinichev, A. G., and Kirkpatrick, R. J., 2004, Molecular structure of water confined in brucite. *Geochimica et Cosmochimica Acta*: 68: 3351-3365.
- Lin J.-F., Struzhkin, V., Mao, H.-K., Hemley, R. J., Chow, P., Hu, M. Y., and Li J., 2004, Magnetic transition in compressed Fe₃C from x-ray emission spectroscopy. *Physical Review B*: 70: 212405.
- Fei Y., Li J., Hirose, K., Minarik, W., Van Orman, J., Sanloup, C., Westrenen, W.V., Komabayashi, T., and Funakoshi K.A., (2004) Critical evaluation of pressure scales at high temperatures by in-situ X-ray diffraction measurements. *Phys. Earth Planet. Int.*: 143-144, High Pressure Mineral Physics Special Volume, 515-526.
- Sinogeikin, S.V., Lakshtanov, D.L., Nicolas, J., and Bass, J.D., 2004, Sound velocity measurements on laser-heated MgO and Al₂O₃. *Phys. Earth Planetary Interiors*: 143-44: 575-586.
- Fei, Y., Van Orman, J., Li J., Westrenen, W. V., Sanloup, C., Minarik, W., Hirose, K., Komabayashi, T., Walter, M., and Funakoshi, K., 2004, Experimentally determined postspinel transformation boundary in Mg₂SiO₄ using MgO as an internal pressure standard and its geophysical implications. *J. Geophys. Res.*: 109(B02305), doi:10.1029/2003JB002562.
- Harrison, M., Marshak, S., and McBride, J., 2004, The Lackawanna synclinorium, Pennsylvania: a basement-controlled salt-collapse structure, partially modified by thin-skinned folding. *Geological Society of America Bulletin*: 116: 1499-1514.
- Wang, H., Ambrose, S.H., and Fouke, B.W., 2004, Evidence of long-term seasonal forcing in rhizolith isotopes during the last glaciation. *Geophysical Research Letter*: 31: L13203, 1-4.
- Marshak, S., 2004, Arcs, Oroclines, Salients, and Syntaxes — The origin of map-view curvature in fold-thrust belts: (in) McClay, K.R., (ed.), *Thrust Tectonics and Petroleum Systems: Am. Assoc. of Petroleum Geologists Memoir* 82: 131-156.
- Wright, H.E., Stephanova, I., Tian, J., Brown, T.A., and Hu, F.S. 2004, A chronological framework for the Holocene vegetational history of northwestern Minnesota: The Steel Lake pollen record. *Quaternary Science Reviews*: 23: 611-626.
- Nicholas, J.D., Sinogeikin, S.V., Kieffer, J., and Bass, J.D. 2004, Spectroscopic evidence of polymorphism in vitreous B₂O₃. *Phys. Rev. Lett.*: 92 (21): 215701(4).
- Harrison, M., Marshak, S., and Onasch, C., 2004, Stratigraphic control of hot fluids on anthracitization, Lackawanna synclinorium, Pennsylvania: *Tectonophysics*: 378: 85-103.
- Song, X.D., 2004, A review of Pn tomography of China, in *The advancement of the seismology and the physics of Earth's interior in China* (Y.T. Chen and C.Y. Wang, Eds.). Seismology Press, Beijing.
- Song, X.D., Li, S.T., Li, Y.C., Zheng, S.H., and Xie, X.N., 2004, Structure of lithospheric mantle and its implications for major basins in China (in Chinese). *Earth Sci.-J.China Univ. Geosci.*: 29(5): 531-538.
- Liang, C.T., Song, X.D., Huang, J.L., 2004, Tomographic inversion of Pn travel-times in China, *J. Geophys. Res.*: 109: B11304.
- Sinogeikin, S.V., Zhang, J., and Bass, J.D., 2004, Elasticity of Single Crystal and Polycrystalline MgSiO₃ Perovskite by Brillouin Spectroscopy. *Geophysical Research Letter*: 31: L06620.
- He, Q. and Sanford, R. A., 2004, Acetate threshold concentrations suggest varying energy requirements during anaerobic respiration by *Anaeromyxobacter dehalogenans*. *Appl. Environ. Microbiol.*: 70: 6940-6943.
- Johnson, T. M. and Bullen, T. D. 2004, Selenium, iron and chromium stable isotope ratio measurements by the double isotope spike TIMS Method. in P. DeGroot, ed., *Handbook of Stable Isotope Analytical Techniques*, Elsevier Science, Amsterdam. 29, 623-651
- He, Q. and Sanford, R. A., 2004, The generation of high biomass from chlororespiring bacteria using a continuous fed-batch bioreactor. *Appl. Microbiol. and Biotech.*: 65: 377-382, 2004.X-Sieve: CMU Sieve 2.2.
- Nelson, D.M., Hu, F.S., Tian, J., Stefanova, I., and Brown, T.A., 2004, Response of C3 and C4 plants to middle-Holocene climatic variation near the forest-prairie ecotone in Minnesota. *Proceedings of the National Academy of Sciences USA*: 101: 562-567.
- Stewart, M.A., and Spivack, A. J., 2004, The stable-chlorine isotope compositions of natural and anthropogenic materials. *Review in Mineralogy and Geochemistry*: 55: 231-254.
- Hou, X., Struble, L. J., and Kirkpatrick, R.J., 2004, Formation of ASR gels and the roles of C-S-H and portlandite. *Cement and Concrete Research*: 34: 1683-1696.
- Sturhahn, W., 2004, Nuclear resonant spectroscopy. *J. Phys. Condens. Matter*: 16: S497.
- Tseng, T.-L., and Chen, W.-P., 2004, Contrasts in seismic waves speeds and density across the 660-km discontinuity beneath the Philippine and the Japan Seas. *J. Geophys. Res.*: 109: (12 pp.), B04302.
- Leu, B.M., Zgierski, M.Z., Wyllie, G.R.M., Scheidt, W.R., Sturhahn, W., Alp, E.E., Durbin, S.M., and Sage, J.T., 2004, Quantitative Vibrational Dynamics of Iron in Nitrosyl Porphyrins. *J.Am.Chem.Soc.*: 126: 4211.
- Kieffer, S.W., 2004, COMMENT on Debris-fan reworking during low-magnitude floods in the Green River canyons of the eastern Uinta Mountains, Colorado and Utah. *Geology*, on-line forum.
- Papandrew, A.B., Yue, A.F., Fultz, B., Halevy, I., Sturhahn, W., Toellner, T.S., Alp, E.E., and Mao, H-K, 2004, Vibrational modes in nanocrystalline iron under high pressure. *Phys.Rev. B*: 69, 144301.
- Frias-Lopez, J., Bonheyo, G.T., and Fouke, B.W., 2004, Identification of differential gene expression in bacteria associated with coral black band disease using RNA-arbitrarily primed PCR. *Applied and Environmental Microbiology*: 70: 3687-3694.
- Sturhahn, W., L'abbe, C., and Toellner T.S., 2004, Exo-interferometric phase determination in nuclear resonant scattering. *Europhys. Lett.*: 66: 506.
- Lynch, J.A., Hollis, J.L., and Hu, F.S., 2004, Climatic and landscape controls of the boreal-forest fire regime: Holocene records from Alaska. *Journal of Ecology*: 92: 477-489.
- Lin, J.-F., Fei, Y., Sturhahn, W., Zhao, J., Mao, H.-K., Hemley, R.J., 2004, Magnetic transition and sound velocities of Fe₃S at high pressure: implications for Earth and planetary cores. *Earth Planet. Sci. Lett.*: 226: 33.

- Struzhkin, V. V., Mao, H-K, Mao, W. L., Hemley, R. J., Sturhahn, W., Alp, E. E., Labbe, C., Hu, M. Y., and Errandonea, D., 2004, Phonon Density of States and Elastic Properties of Fe-based Materials under Compression. *Hyper ne Int.*: 153.
- Wang, J., Kalinichev, A. G., and Kirkpatrick, R. J., 2004, Molecular modeling of the 10 A phase at subduction zone conditions. *Earth and Planetary Science Letters*: 222: 517-527.
- Shen, G., Sturhahn, W., Alp, E.E., Zhao, J., Toellner, T.S., Prakapenka, V.B., Meng, Y., Mao, H.-K., 2004, Phonon density of states in iron at high pressures and high temperatures, *Phys. Chem. Minerals*: 31: 353.
- Zhang, C.L., Fouke, B.W., Bonheyo, G.T., White, D., Huang, Y., and Romanek, C.S., 2004, Lipid biomarkers and carbon isotopes of modern travertine deposits (Yellowstone National Park, USA): Implications for biogeochemical dynamics in hot-spring systems, *Geochimica et Cosmochimica Acta*: 68: 3157-3169.
- Labbe, C., Meersschat, J., Sturhahn, W., Jiang, J.S., Toellner, T.S., Alp, E.E., Bader, S.D., 2004, Nuclear Resonant Magnetometry and its Application to Fe/Cr Multilayers. *Phys. Rev. Lett.*: 93: 037201.
- Lin, J-F, Sturhahn, W., Zhao, J., Shen, G., Mao, H-K, and Hemley, R. J., 2004, Absolute temperature measurement in a laser-heated diamond anvil cell. *Geophys. Res. Lett.*: 31: L14611
- Kobayashi, H., Kamimura, T., Alfe, D., Sturhahn, W., Zhao, J., and Alp, E. E., 2004, Phonon Density of States and Compression Behavior in Iron Sulfide under Pressure. *Phys. Rev. Lett.*: 93: 195503.
- Zhao, J., Sturhahn, W., Lin, J-F Shen, G., Alp, E. E., and Mao, H-K., 2004, Nuclear Resonant Scattering at High Pressure and High Temperature. *High Pressure Research*: 24: 447.
- Wilkerson, M.S., Wilson, J.M., Poblet, J., and Fischer, M.P., 2004, DETACH: an Excel spreadsheet to simulate 2-D cross sections of detachment folds. *Computers & Geosciences*: 30(9-10): 1069-1077.
- Pope, K.O., Kieffer, S.W., and Ames, D.E., 2004, Empirical and theoretical comparisons of the Chicxulub and Sudbury impact structures. *Meteoritics and Planetary Science*: 39 (1): 97-116.
- Kieffer, S.W., 2004, An earth and environmental science perspective on creativity. Report to The Higher Education Academy's Imaginative Curriculum project, co-author with 11 Earth and Environmental Science teachers.
- Wang, J., Kalinichev, A. G., and Kirkpatrick, R. J., 2004, Molecular modeling of the 10 A phase at subduction zone conditions. *Earth and Planetary Science Letters*: 222: 517-527.
- Janse, I., Bok, J., and Zwart, G., 2004, A simple remedy against artifactual double bands in denaturing gradient gel electrophoresis. *J. Microbiol. Methods*: 57: 279-281
- Tepley F. J., Lundstrom, C. C., Sims, K., and Hekinian, R., 2004, U-series Disequilibria in MORB From the Garrett Transform and Implications for Mantle Melting. *Earth and Planetary Science Letters*: 223: 79-97.
- Chen, W.-P., and Yang, Z.-H., 2004, Earthquakes beneath the Himalayas and Tibet: Evidence for strong lithospheric mantle, *Science*: 304: 1949-1952.
- Kaufman et al., including Hu, F.S., 2004, Holocene thermal maximum in the western Arctic (0 to 180° W). *Quaternary Science Reviews*: 23: 529-560.
- Kirkpatrick, R. J., Kalinichev, A., Wang, J., Hou, X., and Amonette, J., 2004, Molecular modeling of the vibrational spectra of surface and interlayer species of layered double hydroxides and other layer-structure materials, in The Application of Vibrational Spectroscopy to Clay Minerals and Layered Double Hydroxides, CMS Workshop Lectures; Klopogge, J. T., Ed.; The Clay Minerals Society: Aurora, CO, 2004; 13: 239-285.
- Brown, D. E., Toellner, T. S., Sturhahn, W., Alp, E.E., Hu, M., Kruk, R., Rogacki, K. and Can, P.C., 2004, Partial Phonon Density of States of Dysprosium and its Compounds Measured Using Inelastic Nuclear Resonance Scattering. *Hyper ne Int.*: 153: 17.
- Ellis A. S., Johnson T. M., and Bullen, T. D., 2004, Using chromium stable isotope ratios to quantify Cr(VI) reduction: lack of sorption effects. *Env. Sci. Technol.*: 38: 3604-3607
- Jackson, J.M., Zhang, J., and Bass, J.D., 2004, Sound velocities of aluminous MgSiO₃ perovskite: Implications for aluminum heterogeneity in Earth's lower mantle. *Geophysical Research Letters*: 31(10): Art. No. L10614.
- Hurst, S. D., Karson, J. A., 2004, Side-scan sonar along the north wall of the Hess Deep Rift: Processing, texture analysis, and geologic ground truth on an oceanic escarpment. *J. Geophys. Res.*: 109.
- Blackman, D. K., Karson, J.A., Kelley, D.S., Cann, J.R., Früh-Green, G.L., Gee, J.S., Hurst, S.D., John, B.E., Morgan, J., Nooner, S.L., Ross, D.K., Schroeder, T.J., & Williams, E.A., 2004, Geology of the Atlantis Massif (Mid-Atlantic Ridge, 30°N): Implications for the evolution of an ultramafic oceanic core complex, *Marine Geophysical Researches*: 23: 443-469.
- Song, X.D., 2004, A review of Pn tomography of China, in *Advances (in) Seismology and Physics of Earth's Interior in China*. Seismological Press, Beijing, 321-345.
- Andre Pugin, IGS**
Architecture of tunnel-channels and buried valleys in previously glaciated areas, hydrogeological implications
- Eric Ferre, Southern Illinois University**
Magnetic anisotropy of mantle peridotites: example of the Twin Sisters Dunite, Washington State
- Przemek Dera, Carnegie Institution of Washington**
Structural aspects of pressure-induced phase transitions
- Steve Van der Hoven, Illinois State University**
Radiogenic ⁴He as a Tracer for Hydrogeologic Processes in Buried Valley Aquifers
- Jorge Frias-Lopez, University of Illinois**
Microbiology of coral diseases: The ecology of black band disease (BBD)
- Basil Tikoff, University of Wisconsin, Madison**
Fabric and flow in the mantle and mountain building
- Nicole Gasparini, Yale University**
Modeling Erosion in Mountain Rives
- Linda Bonnell, AAPG Distinguished Lecturer**
Sealed, Bridged, or Open – A New Theory of Quartz Cementation in Fractures
- Linda Ivany, Syracuse University**
The ABCs of Paleobiology: Insights from the Geochemistry of Accretionary Biogenic Carbonates
- Dan Blake, University of Illinois**
Penguins, Sea Stars, and Moss Animals
- Jeff Post, Smithsonian Institution**
Manganese Oxide Minerals: Soils to Synchrotrons
- Jim Kirkpatrick, University of Illinois**
Nuclear Magnetic Resonance and Molecular Modeling Studies of Minerals and Mineral-fluid Interactions
- James W. Kirchner, University of California, Berkeley**
A Spectral View of Watershed Processes
- Thorne Lay, University of California, Santa Cruz**
Earth's Hidden Boundary Layer: Mysteries at the Base of the Mantle
- Marc Reinholdt, University of Illinois**
Clay minerals: synthesis, structural spectroscopic characterizations and clay/polymer nanocomposites elaboration
- Suzan van der Lee, Northwestern University**
Seismic constraints on thickness, rigidity, temperature and composition of the lithosphere and underlying mantle
- Eric Calais, Purdue University**
Continental Deformation in Asia: New Insights from GPS Measurements and Deformation Models
- Jim Best, University of Leeds**
The geomorphology and sedimentology of a big braided river: flow, form and management issues in the Jamuna River, Bangladesh
- Jennifer Roberts, University of Kansas**
Guess who's coming to dinner – The consequences of nutrient-driven silicate weathering by microbial consortia
- Ann Budd, University of Iowa**
Species boundaries in reef corals: Insight from the fossil record
- Jeremy Fein, University of Notre Dame**
Quantifying bacteria-water-rock adsorption reactions using a surface complexation approach
- Feng Sheng Hu, University of Illinois**
Drought History of the Midwest
- Jeff Catalano, Argonne National Laboratory**
Probing Uranium Speciation in Contaminated Sediments and at the Mineral-Water Interface
- Haydn Murray, Indiana University**
Kaolin Occurrences, Genesis and Utilization
- Raymond Arvidson, Washington University, St. Louis**
The Mars Exploration Rover Mission
- Robert W. Howarth, Cornell University**
Human Alteration of the Nitrogen Cycle at Regional Scales: Causes, Consequences, and Steps towards Solutions



Students Jared Frieberg, Emily Berna, Nicole Bettinardi, Ted Flynn, and Josh Carron on Utah's San Juan River. The trip capped off Professor Craig Lundstrom's Geology 415/515. "Geology of the Southwest" class.



The Department's new state-of-the-art Inductively Coupled Plasma Mass Spectrometer (ICPMS) was installed in December of last year. One of only 50 in the world, the ICPMS was purchased with a grant from the National Science Foundation and will be used for various geo-chemistry analyses. Pictured behind the spectrometer are, from left to right; Scott Clark, Craig Lundstrom, Justin Glessner, Tom Johnson and Emily Berna.

Count me in!

Please accept my contribution in support of Geology Programs at the University of Illinois

\$500 \$250 \$100 \$50 Other _____
(Please print)

Name(s)

Address

City

State

Zip

Please indicate how you would like your gift used.

- GeoThrust (unrestricted) - 776641
- Geology Library Fund - 332463
- Harold R. Wanless Graduate Fellowship Fund - 773786
- Kansas-Oklahoma Alumni Fund - 772424
- Geology Midwest Alumni Fund - 772722
- Texas-Louisiana Alumni Fund - 773720
- W. Hilton Johnson Memorial Field Fund - 772408

Please make check payable to:

University of Illinois Foundation

Mail to:

Department of Geology
c/o University of Illinois Foundation
PO Box 3429
Champaign, IL 61826-9916

Or to make a gift by credit card, you may do so online at <http://www.uif.illinois.edu/>

Thank You!

5M9DS
76641



Department of Geology

University of Illinois at Urbana-Champaign
245 Natural History Building
1301 W. Green St.
Urbana, IL 61801

Non-Profit Organization
U.S. Postage
PAID
Permit No. 75
Champaign, IL 61820