2007 YEAR IN REVIEW

Department of Geology

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Students Explore Coral Reefs, Shear Cliffs During Overseas Field Trips

In the middle of a stark Illinois winter, Professor Bruce Fouke and 35 students hopped a plane and headed for the southernmost part of the Caribbean. Another example of "timing is everything." The trip was the culmination of a semester's worth of lectures and laboratory preparations in Geology 415/515, Field Geology, co-taught in 2007 by Fouke and Ed Morford, assistant director of campus recreation for aquatics. Students were also required to attend class sessions at Freer Pool where they demonstrated their swimming capabilities, learned first aid, and practiced snorkel-based research techniques that they then applied on the coral reefs.

From January 4 to January 11, 2007, students studied modern and ancient coral reefs surrounding the island of Curaçao, located in the Caribbean Sea near the northern coast of Venezuela. Approximately half of the course was taught in the shallow, near shore environments using snorkel techniques, while the other half was based on land.

The students experienced a highly integrative educational experience, which included dynamic sedimentary processes, geomicrobiology, large-scale tectonics and groundwater hydrology. "Curaçao is a unique natural laboratory in which to teach students the complex interactions between life and earth, and allow them to tangibly track these physical, chemical, and biological feedback interactions through geological time," said Fouke.

Tom Schickel (MS '06), a recent graduate of the Fouke research group at Illinois who now works full-time as an exploration geologist at Shell, joined the trip to help Fouke teach techniques fundamental to hydrocarbon exploration, as well as meet students and further strengthen long-standing recruiting ties with the Department.

Just after snorkeling at the Water Plant dive site on Curaçao, Fouke shows the students how a spiny sea urchin moves its spines using internal water pressure, called a hydrostatic skeleton.

In May 2008, Professor Jim Best will be teaching Field Geology on the west coast of Ireland. Best will be accompanied by a mixture of undergraduate and graduate students—39 in all—and five faculty and staff who will visit the magnificent cliffs of County Clare. They will stay in the small country village of Kilfenora. Best explains that the cliffs are a spectacular example of a range of ancient sedimentary environments, some

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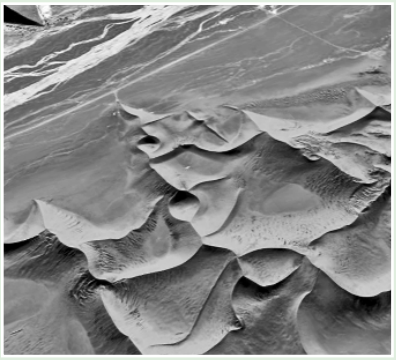
New Textbook Uses Google Earth



Sand dunes in Namibia as seen from Google Earth.

In the course of an introductory geology class, students can fly to the Amazon rainforest, the deserts of Namibia, or the tundra of Siberia courtesy of the latest edition of *Earth: Portrait of a Planet,* a textbook written by Geology Department Head and Professor Steve Marshak.

The third edition of *Earth: Portrait of a Planet,* published in late 2007, includes over 200 virtual field trips called "Geotours." Each Geotour utilizes Google Earth to fly students to spectacular examples of geologic features. Google Earth, a free computer tool that provides a navigable mosaic of satellite imagery, allows students to examine structures and landscapes in amazing detail.

"Instead of just seeing a static image of Mount St. Helens, students can fly around the volcano, can zoom in and zoom out of the crater, and can tour the damage that

(continued on page 3)

Letter From The Head

If the only constant in life is change, then 2007 is truly a year of constant change…

While we congratulate Jay Bass and Craig Bethke as new Ralph E. Grim Professors of Geology (with formal investitures held on February 28, 2008), R. James Kirkpatrick, a Ralph E. Grim Professor of Geology and former head of the department, has resigned his post of senior executive associate dean of the College of Liberal Arts and Sciences to become the dean of the College of Natural Science at the Michigan State University. We wish you all the best, Jim and Carol.

Meanwhile, we welcome Marilyn Whalen, the new administrative secretary to the Department as Barb Elmore, who served in this position for decades, has retired. I have no doubt she will keep busy in her retirement! Throughout this issue of the newsletter, you will find related reports on these important milestones in the Department and more. Speaking of which, you'll notice that we have a new editor, Kim Schmidt, who has instigated some new features in this issue.

The fact that I am writing this letter means Steve Marshak, who has served the Department as head for almost a decade, is taking a well-deserved sabbatical for the entire 2007-08 academic year. In addition to research time at the Woods Hole Institution of Oceanography in Massachusetts, Steve is traveling to Brazil and France to collaborate with colleagues and conduct fieldwork. So far Steve has managed to stay away from administrative matters that may distract him from the privileges of being on sabbatical.

Over the past summer, the Department officially became a member of the School of Earth, Society, and Environment. Don Wuebbles, a professor of Atmospheric Sciences, is serving as executive coordinator of the School while an international search for a permanent director is underway. In the short time since I served as acting head, it is quite apparent that the long tradition of strong support from our alumni distinguishes us from Atmospheric Sciences and Geography, the other two Departments in the School.

To this end, the newly formed GeoThrust Graduate Fellowship exemplifies the spirit and the tradition of giving back, bringing our total number of graduate fellowships to six (others include the Bluestem, the Evergreen, the Texas/Louisiana Geology Alumni, the Harold R. Wanless, and the Harold W. Scott Fellowships). Over the years, the GeoThrust Committee, comprised of all alumni volunteers, has worked diligently and creatively with all of you to support the Department in many ways. The story (p. 7) behind the new Fellowship is intriguing and we are so proud of the dedication and the entrepreneurship of our alumni and friends! Indeed, the insight to recognize opportunities, the ability to assemble resources and the perseverance to achieve goals are what makes our students, alumni, friends, and faculty shine in so many different endeavors.

On this note, you have probably noticed that the job market for geoscientists has been booming. The growth is not just in the energy sector. Mining, land management, environmental, and geotechnical consulting all have large, unmet demands for qualified geoscientists. This trend is expected to continue in the near future. This background plays into the long-term planning of the Department and will be the subject of careful consideration in 2008 and beyond. Meanwhile, some of our majors are working with graduate students to organize the very first student chapter of the American Association of Petroleum Geologists on this campus.

With research and teaching going strong across the board in the Department, I have focused my energy as acting head in seeking direct support from industry. In recent years, with the exception of support for individual programs or field trips, support of the Department from industry is largely in the form of matching funds. We are in the process of developing a close working relationship with some major petroleum companies, seeking their support in the form of graduate fellowships and undergraduate scholarships in Geology. So stay tuned.

Indeed, we love to hear from all of you—about your activities, your ideas, your vision and above all, your passion; your passion for the future of the Department, the University, the geosciences, and the society at large. Please enjoy reading this issue and stay in touch.

Best wishes,
Wang-Ping Chen

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

(continued from page 1)

of the best in the world. "These sediments are 325 million years old and show past surface environments, from shallow water corals and reefs, deltas with vegetation and swamps, through shallow seas with a whole range of different beasts swimming around in them, to the dark, deep seas. So what we can do is go and look at essentially a slice through all these environments and work out how this area formed geologically," Best said.

Many of the sediments the students will be studying are similar to those found subsurface in Illinois and Pennsylvania. In fact, much of the early pioneering work on how these types of sediments accumulated was done by Harold Wanless during his long tenure at Illinois.

While on the trip, students will spend a majority of their time working in groups to collect, analyze, and present data, using what they've learned in the past semester to create a picture of the geological history of this paleo-environment. In the last three days of the trip, they will travel to a site that they have not yet seen and will be asked to create a geological map of the area, complete with an interpretation of the area's geological history.

Best has invited several guest speakers to join them in the field in Ireland. The first, Dr. Mike Simms from the National Museums of Northern Ireland, will help the group look at recent glacial geology, including the landforms as they have evolved over the last 20,000 to 30,000 years. The second is Dr. Carleton Jones, an archeologist from the National University of Ireland at Galway, who will take the group to some of Ireland's most spectacular and beautifully preserved Neolithic remains, including burial chambers. "This is an area that was populated from about 7,000 years B.C. onwards and there are many remains of early habitation as these cultures farmed the hills, changed the landscape, and left their burial grounds and different marks on the geography of the area. The trip is meant to be principally geological in focus, but I also want to discuss recent geomorphology, including how the landscape has been formed and shaped, and recent human occupation," said Best.

Hydrocarbon geologists from oil companies around the world visit the cliffs of County Clare to learn more about ancient sediments and apply their findings to current drilling projects. Best sees this trip as an opportunity for students to learn not only about the academic side of geology, but also about the applied and economic side. Schickel, who traveled with Fouke to Curaçao, will also participate in Best's course enabling students to make "links between industry and what the students are learning in their undergraduate or graduate courses," said Best.

The cliffs at Foohagh Point, County Clare show syn-sedimentary soft sediment deformation in deltaic sediments. These carboniferous deltaic sediments were deformed while they were still soft and results of this process is vividly seen on this cliff face .

Shell Oil Company has provided different forms of support to the Department and is making a major subsidy so that these major field trips are accessible for students. Acting Head Wang-Ping Chen notes that "Industrial sponsorship of University activities is in a state of flux as state funding continues to decline. In this case, direct support from Shell enables us to take students to key field areas overseas—an important function in the context of the "global village."

In previous years, students in Field Geology have traveled to the American Southwest to study geology in the Death Valley and along the San Andreas Fault with Professor Steve Marshak and in the Grand Canyon and along the San Juan River region with Associate Professor Craig Lundstrom.

New Textbook

(continued from page 1)

resulted from the cataclysmic 1980 explosion. Students can also measure distances and elevations right on screen. I think that such active imagery achieves a much better job of conveying the context of geology, than can any static image," said Marshak.

To help instructors use Geotours for classes, M. Scott Wilkerson (PhD '91), now chair of the geology department at DePauw University, and Marshak produced a new workbook, as an ancillary to *Earth: Portrait of a Planet*. The workbook provides questions about the Geotour sites that students can answer only if they visit the site themselves, on the computer. Wilkerson, who introduced Marshak to Google Earth, has also prepared a computer file that allows students to reach Geotour sites at the click of a button.

The use of Google Earth as a teaching tool is a relatively new idea—in fact *Earth* is the first geology textbook to integrate the tool. The book's publisher, W.W. Norton & Co., reports that the Geotours, and the new workbook, are being incorporated in courses around the country.

Disclaimer: The Department of Geology holds no business interest with either Google *or* W.W. Norton & Co.

Kirkpatrick Retires from College

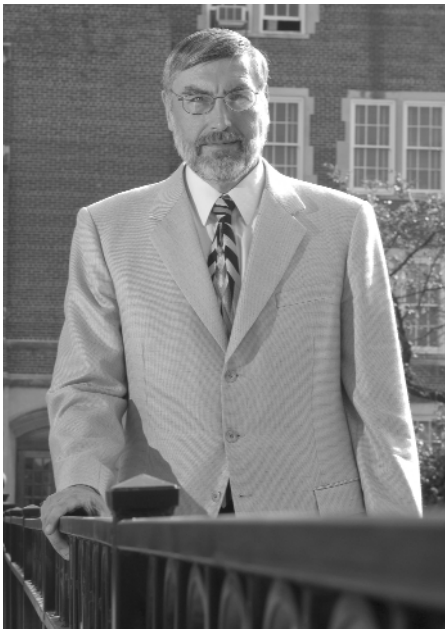
Jim Kirkpatrick retired from the Department in July 2007. Kirkpatrick first came to Illinois when he was a graduate student in the early 1970s. He went on to become an alumnus, a professor, a department head, a dean, and a donor. By the time of his retirement, he had dedicated almost 40 years of service to Illinois.

Shortly after earning his Ph.D. from Illinois in 1972, Kirkpatrick left the state, traveling first to Houston to take a position as a senior research geologist at Exxon Production Research Company. He then spent two years as a research fellow at Harvard before moving to California to work on the Deep-Sea Drilling Project with the Scripps Institution of Oceanography. The Midwest called him back, however, and in 1978 he returned to Illinois to join the faculty.

A short ten years later, Kirkpatrick was named head of the department, a position he held from 1988 to 1997 when he was named a senior executive associate dean in the College of Liberal Arts and Sciences.

Throughout his tenure as an administrator, Kirkpatrick maintained an active and distinguished research program. "Jim is one of those unique kinds of faculty who reinvents himself progressively during his career so what he's doing at a late stage in his career is totally different than what he was doing at the initial stage of his career. The result of that is that he was always on the cutting edge of his discipline," said Steve Marshak, head of the department.

Kirkpatrick was Professor Craig Bethke's advisor while Bethke earned his doctorate at Illinois. "Throughout his career at Illinois, Jim's research program remained at the very pinnacle of his field, in terms of productivity



and scientific impact. And the time and energy he put into leadership and service, first as department head and then as associate dean for the sciences, was the impetus for revitalizing the geology department. Jim is not someone who can be replaced," said Bethke.

In 2004, Kirkpatrick was honored with the Dana Medal from the Mineralogical Society of America. In his acceptance speech, Kirkpatrick said, "We live in an extraordinary historical period for science, and it has been my great fortune to be able to build my career during that time. When I started, equilibrium thermodynamics was the nearly universal way of thinking about geochemical systems, the electron microprobe was a novel tool, and automated diffractometers were just coming on line. What change there has been! The two parts of my career, the earlier days of crystallization kinetics and igneous petrology and the later days of materials structure and dynamics with NMR spectroscopy and molecular modeling, are reflections of these changes."

Kirkpatrick's career has been just as extraordinary as the time in which he's worked and, accordingly, his peers have recognized his contributions to the field. In addition to the Dana Medal, Kirkpatrick was awarded the Brunauer Award and was named a fellow of the Mineralogical Society of America, the Geological Society of America, and the America Ceramic Society. In 2005 he was named the R.E. Grim Professor of Geology.

In July 2007, Kirkpatrick was feted at a retirement celebration celebrating his years of service to the University. Held at the Union, more than 100 guests attended and Dean Sarah Mangelsdorf, former Interim Provost and Dean Jesse Delia, and Department Head Steve Marshak gave remarks.

Upon his retirement, Kirkpatrick left an endowment to the Department that will fund the Kirkpatrick lectureship. Kirkpatrick delivered the inaugural speech in August, entitled "Spectroscopic and Computational Studies of Mineral-Fluid Interactions." "The Kirkpatrick lectureship—a fitting reminder of Jim's legacy—is the latest addition to the Department's named lecture series, bringing the total to nine." said Wang-Ping Chen, acting head of the department.

Kirkpatrick is now the dean of the College of Natural Science at Michigan State University. His wife, Carol, retired from the office of the Provost and Vice Chancellor for Academic Affairs at UIUC to join Jim at Michigan State. In the 1980's, she was a support staff who mainly worked on matters related to graduate and undergraduate studies in the Department.

A Trip Back to Camp

Over the past year and a half, Norb Cygan (BS '54, MS '56, PhD '62) visited Fort Lewis, Colorado and Sheridan, Wyoming—field camp sites that Illinois students attended from the 1950s through the 1980s. Cygan was an assistant at the Sheridan camp from 1955-1956 and was visiting lecturer from 1956-1961.

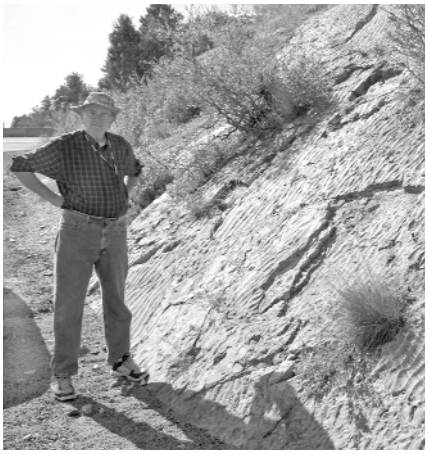
What did you find when you went back to Fort Lewis, Colorado?

In the fall of 2006, Bob "Moose" Leonard (BS '55) and I visited the Fort Lewis, Coloardo area where field camp was held in the early and mid-50s. Fort Lewis, at that time, was a two-year college for the University of Colorado system and was primarily a high altitude agriculture school. A lot of people went there from overseas, from places like Chile, Austria, places like that, that had a high altitude farming and so on.

At field camp, we stayed in what was the old army barracks of Fort Lewis itself which was a frontier post. We used the facilities of the university for lectures and making maps after we went out in the field every day to do field work. When I visited in 2006, many of the buildings had been torn down. The old barracks where we students stayed was a bull artificial insemination station. I thought everyone would get a kick out of that. That building is still there.

When did Illinois move to the Sheridan, Wyoming camp?

In 1955 field camp moved to Sheridan, Wyoming. Initially we used old



army barracks. Then we stayed in the abandoned Sheridan hospital.

Eventually we moved the campus up to Sheridan Junior College. The college has expanded quite a bit, but when we were there, at one time, everybody had sleeping bags and slept on the gym floor. That was our barracks. We also used the facilities at that site for drafting and lectures.

What did you do for fun?

The ranchers used to hold parties for us. They really treated us well. They took us out waterskiing on the lakes there and they had barbeques on their ranches. We were allowed to walk through their ranches and look at the rocks. Many famous people owned ranches there—like actor Robert Taylor. He was quite famous back in the 40s. Some of the guys had lunch at his ranch. We also made side trips to Yellowstone and the Grand Tetons and camped out on those trips.

Can you tell us about the memory brick?

There is a plaza in town called Sheridan Plaza. They have statues of cowboys and Indians and pioneers. I bought a brick that commemorated Illinois's field camp and they planted that brick along with many others in the plaza. A lot of the people there have long since passed away, but there are a lot of people, especially the women who are now in their 40s and 50s who remember our students.

Why is field camp important?

Many people decided after field camp they didn't like that kind of life and dropped out. Other people realized that this was going to be part of their life—doing fieldwork all over the world.

What are you doing now?

I've done a bit of consulting this last year, especially on water, and some on uranium. But my big push has been working with kids and teachers at Dinosaur Ridge, an area on the outside of Denver that has dinosaur footprints and bones in the rocks which are uplifted from the Rocky Mountain event. It is an outdoor educational lab and tens of thousands of kids a year come to visit. I teach classes on the geology of Colorado at Denver University. I also teach special science programs to Colorado teachers through Colorado School of Mines and University of Northern Colorado.

Photo courtesy Wasatch-Uinta Field Camp website.

Field Camp remains an important part of the geology program today. Illinois has partnered with the University of Iowa, University of Minnesota-Duluth, University of Wisconsin-Madison, Michigan State University, and the University of the Pacific to teach this six-week course in Park City, Utah. In 2008, 21 students from Illinois will be attending Wasatch-Uinta Field Camp—the largest number of students attending in 25 years. Lecturer Michael Stewart will be an instructor at the camp and the new director is our alum Kurt Burmeister (PhD '05). Students will map in the Wasatch and Uinta Mountain Ranges and take day trips to Grand Teton National Park, southeastern Utah, and the gold fields of Nevada.

Alumna at Caltech


Jennifer Jackson

Editor's Note: We are adding "Profile of Recent Alumni" as a new feature in the Year in Review.

Jennifer Jackson (PhD '05) was one of many first-year undergraduates sitting in the lecture hall for Geology 104, Geology of the Natural Parks. The class filled a requirement, and though she liked science in high school, she never expected that little more than a decade later she would land a faculty position at the California Institute of Technology.

But that class inspired her to sign up for more courses in geology and she began to realize that she wanted to turn her interest into an academic career. Soon after taking Physical Geology, she began working in Professor Jay Bass's lab doing what she calls "real research" for the first time. The combination of her work in the lab and an inspirational trip to northwest Arizona with Professor Steve Marshak's Field Geology class solidified her interest in geosciences and set her on her path. In 1999, Jennifer graduated from Illinois with a degree in mathematics and a minor in geology.

After earning her master's degree in mineralogy and crystallography from Notre Dame in 2000, Jennifer returned to Illinois to pursue her Ph.D. Again, she found herself working alongside Professor Bass who served as her advisor for her dissertation, "The Effect of Minor Elements on the Physical and Chemical Properties of Lower Mantle Minerals at High-Pressure."

Jennifer is now an assistant professor of mineral physics in the Seismological Laboratory of the Division of Geological and Planetary Sciences at Caltech where her current research focuses on the material properties of deep Earth minerals under extreme conditions in an effort to understand terrestrial-type planetary evolution. In the past two years she has been invited all over the world, and has visited Japan, Australia, England, and Italy to give talks about her research.

Though her research is integral to her position at Caltech, Jennifer enjoys the balance between research and teaching. Now, with a lab of her own, Jennifer is a mentor to three graduate students and one undergraduate student. Working alongside these students in the lab offers her the opportunity to do for them what Illinois faculty did for her nearly ten years ago: to provide support and encouragement. "I want to make sure they have all the tools they need and every opportunity to learn and do exciting research," she said.

In addition to the one-on-one instruction in the lab, Jennifer also spends time in the classroom teaching courses such as "Topics in Deep Earth Mineral Physics" and "Mineral Physics of Earth's Interior," a course she recently developed for her department. "Teaching keeps everything in perspective," she said. "These very sharp students are here to learn, and when you are explaining high-level science to them, you're also learning."

Students and Faculty Named 'Excellent' Instructors

Twenty-three Department of Geology instructors were named to the UIUC List of Teachers Ranked as Excellent by Their Students for the spring, summer, and fall 2007 semesters.

Graduate students Charles Bopp, Shane Butler, Bin Chen, Melissa Chipman, Adam Ianno, Daniela Lindner, Chris Majerczyk, Chris Mead, Mara Morgenstern, Jessica Palmer, Alan Piggot, and Pragnyadipta (Deep) Sen were named to the list for their work as teaching assistants in the Department.

Faculty and academic professionals appearing on this list include Stephen Altaner, Jay Bass, Craig Bethke, Bruce Fouke, Eileen Herrstrom, Tom Johnson, Jei Li, Ann Long, Craig Lundstrom, Steve Marshak, and Michael Stewart.

Four instructors received the highest ranking of "outstanding." During the spring semester, this ranking was earned by Shane Butler (Geology 108). Associate Professor Stephen Altaner (Geology 100) and Pragnyadipta (Deep) Sen (Geology 417) were named outstanding for the summer semester. In the fall, Daniela Lindner (Geology 101) and Pragnyadipta (Deep) Sen (Geology 411) earned top honors.

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

GeoThrust Committee Rallies Together to Fund New Graduate Fellowship

In 2005, a fundraising effort to build the Department's endowment not only met, but exceeded its goal of $3 million. Lead by the GeoThrust Committee, this campaign resulted in generous gifts from hundreds of donors and established a wide base of departmental support including fellowships, named professorships, and two funded lecture series among other needs.

Members of the GeoThrust Committee, chaired by Bill Soderman (MS '60, PhD '62), recently embarked on a new fundraising effort coinciding with the larger University of Illinois campaign, Brilliant Futures. "At the end of the previous fundraising process I realized the Committee didn't give a group gift. It occurred to me that this would be an excellent way to commemorate the group's good work." Thus, the GeoThrust Graduate Fellowship was born.

Soderman contributed half the funds needed to establish the fellowship in September 2007 and encouraged his fellow Committee members to do the same. "I'm strongly motivated to develop fellowships at Illinois—I know what it meant to receive a fellowship myself," said Soderman, who received the Petroleum Research Foundation Fellowship as a doctoral student. "It makes me feel good that I can give back to the University."

Members embraced Soderman's challenge and quickly raised the remaining funds needed. The official agreement for the GeoThrust Graduate Fellowship was created in November 2007 and the Office of the Provost will provide matching funds to enhance its impact.

"I was so pleased to have such a good and timely response," said Soderman.

Acting Head Wang-Ping Chen said, "The Department is truly fortunate to have the GeoThrust Committee as a driving force for our fundraising efforts. Over the years, the Committee has worked diligently and creatively with all of our alumni and friends to support the Department in many ways. The new fellowship is another example of inspiration, leadership, and entrepreneurship—characteristic of our alumni."

Alumni and friends who are interested in contributing to the GeoThrust Graduate Fellowship, or to the Department in general, are encouraged to contact the LAS Office of Advancement at (877) 265-4910, (see back cover for details) and indicate that you wish to make a gift to the Department of Geology.

Members of the GeoThrust Committee

James R. Baroffio (PhD '64)
David K. Beach (BS '73)
Marion E. Bickford (MS '58; PhD '60)
Lester W. Clutter (BS '48)
Norbert E. Cygan (BS '54; MS '56; PhD '62)
Edwin H. Franklin (BS '56)
John R. Garino (BS '57)
James W. Granath (BS '71; MS '73)
Morris W. Leighton (BS '47)
Haydn H. Murray (BS '48)
Patricia A. Santogrossi (BS '74; MS '77)
J. William Soderman (MS '60; PhD '62)
Jack C. Threet (AB '51)
F. Michael Wahl (MS '57; PhD '58)

Beloved Secretary Retires After Twenty Years

In August 2007, Geology administrative secretary Barb Elmore retired from the University with 26 years of service. Barb was with the geology department for 20 of those years and was well loved by faculty and students alike.

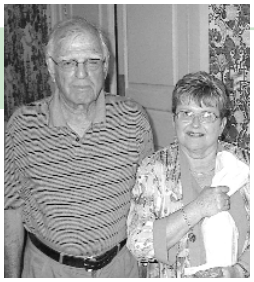
"Barb became the institutional memory of the department—over the years, she really kept track of what all of our graduates have done. In fact, she would often be the first person alumni would go see when they came back to visit the department," said Professor and Head of the Department, Steve Marshak.

Elmore was honored twice for her work—once in 1998 when she was awarded the Chancellor's Distinguished Staff Award and again in 2007 when she was named one of the recipients of the 2007-2008 LAS Staff Award.

Marshak explained that these awards recognized Elmore's success in expertly managing a heavy workload. "When Barb took the job, she effectively took on three full jobs and she did them all incredibly well."

Upon her retirement, the Department and friends celebrated Elmore at a party held at the Illini Union. "Not only was the party well attended, but a lot of people got up to give testimonials about Barb. The expressions of gratitude came from everyone, ranging from current undergrads to senior emeriti," said Marshak.

When asked what she is doing with her new found free time, Elmore said, "I don't know how I found the time to work!" Since her retirement, Elmore has kept busy with projects around the house and with helping her mother, who is almost 90 and still lives alone. She is also spending more time on the hobbies that she loves, including reading and crochet.



On August 29, 2007, friends and colleagues celebrated Barb's service to the Department during a retirement party held at the Illini Union

Elmore notes that she greatly enjoyed working with students, but she acknowledges that it was bittersweet to see them graduate. "It was always fulfilling to see the students attend Commencement after all their hard work," Elmore said. "But then, sadly, I had to say goodbye!" Luckily, as Marshak pointed out, many graduates came back to see her. "I really enjoyed seeing the alumni when they came back," she said. "It was always fun to have them come in."

Oceanography on the Prairie

by Ralph L. Langenheim

Editor's Note: "Windows on 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.*

Improbable as it may seem, oceanography was an important part of our departmental program, beginning in the 1930's. A newly-minted Ph.D. from the University of Chicago, Francis Shepard came to Illinois in 1922, joining our faculty as a structural geologist. He remained responsible for instruction in structural geology until 1942 when he joined the University of California Division of War Research. His doctoral research in structural geology was based on field work begun on his honeymoon when he traveled by train, horseback, and on foot, camping out in the Canadian Rockies. One summer on Cape Cod, however, would alter his research significantly and lead to a very distinguished career as a founding father of a sub-discipline in marine geology.

After the birth of their first child, Shepard and his wife Elizabeth did not return to the Rockies and to his previous research, but instead spent the summer cruising off Cape Cod on the family yacht at the suggestion of his father. While on the yacht, Shepard collected sediment samples from the shoreline to the edge of the shelf. Here he discovered that, instead of sediments becoming progressively finer grained offshore, coarse and fine grained sediments occurred patchily between the shore and the shelf margin. This pattern was contrary to accepted doctrine, a point that he made in his 1927 "Influence of Oscillating Sea Level on the Development of the Continental Shelves," a report that attracted wide notice and marked the beginning of a permanent redirection in Shepard's research career. Thenceforth he concentrated on the submarine geology of the continental shelf and slope, most notably describing the submarine canyons on the Atlantic coast of the United States and, most extensively, off the coast of Southern California, while maintaining his academic home base at Illinois until 1942.

As his interests changed, Shepard introduced geomorphology to our curriculum in 1930, a course that he continued as Physiographic Geology from 1931 through 1941. Finally, Geology of the Ocean was introduced in 1941. His 1948 book, *Submarine Geology,* perhaps the capstone of his career, is a summary of the results of the pioneering, gentleman yachtsmen who established modern American academic oceanography at the Woods Hole and Scripps oceanographic institutions.

While at Illinois, and as a life long friend, Shepard collaborated with Harold Wanless, who came to Illinois after graduating from Princeton as a new Ph.D. in 1923. Together, they published *Sea Level and Climatic Changes Related to Late Paleozoic Cycles* (1936), which explained Pennsylvanian cyclic sedimentary patterns as brought about by the melting and the reestablishment of continental glaciers in the Southern Hemisphere. Decades after its publication, this work that countered the time's consensus that Late Paleozoic cyclic sediments resulted from repeated crustal uplift and depression, has become the generally accepted explanation for Late Paleozoic cyclic sedimentation.

Wanless was also an early protagonist for using aerial photographs in geological mapping and research, a technique that was just beginning to come to the fore in the late 1930's. Although primarily famous for his cyclothemic studies, Wanless continued his collaboration with Shepard, compiling sequential charts and aerial photographic records of Gulf and Atlantic shoreline configurations while Shepard compiled records of the Pacific Coast. Their final report, "Our Changing Coastlines," was published after Wanless' death in 1971. While Wanless supervised doctoral candidate Mohammed al-Ashry, now famous for his work on marine environments for the United Nations, Shepard supervised three Illinois doctoral students in marine geology: George Cohee, who left oceanography for a distinguished career in government surveys; K. O. Emery, whose outstanding career culminated in his directorship of the Woods Hole Oceanographic Institution; and Robert Dietz who became famous for pioneering research on deep sea mapping, deep sea drilling, sea floor spreading, and meteoritic impact sites. Departmental legend has it that Dietz proposed a study of lunar geology for his Ph.D. project only to be turned aside. Dietz also was associated with the Department in the 1980's as an adjunct professor supervising thesis research on impact sites.

The saga of oceanography on the Boneyard continued with Jack Hough, who always contended that his work on the Great Lakes was oceanography, and with Bill Hay; a suitable topic for our next installment.

Photo by Edwin F. Bushman (BS '41). Photo courtesy of the University of Illinois Archives.

Francis Shepard testing a sample grabber and a stereo camera on the E.W. Scripps, September 22, 1942

Around the Department

Professor **Wang-Ping Chen** was named acting head of the Department for the academic year 2007-2008 while Professor Steve Marshak was on sabbatical. This event cut short Chen's sabbatical as a chaired visiting professor of the National Science Council of Taiwan at the Institute of Earth Sciences, Academia Sinica.

Geophysical Journal International ranked a paper co-authored by Professor **Jay Bass** and three French colleagues as number ten on a list of "most cited papers over the last three years." The paper is titled, "Lower Mantle Composition and Temperature from Mineral Physics and Thermodynamic Modeling" and was published in the March 2005 issue.

Professor **Steve Marshak** spent the 2007-2008 academic year on sabbatical. During the fall, he worked with geologists at the U.S. Geological Survey in Woods Hole, MA on thrust-belt deformation. He went to Brazil in the winter to work with a colleague there on ongoing projects concerning Precambrian geology. In the spring, he worked at the University of Lausanne (Switzerland), continuing work on Precambrian geology, and was a visiting professor at the University of Naples (Italy), continuing work on thrust belts.

Dr. **George Devries Klein**, professor emeritus, remains active as a geological consultant in the greater Houston area and is president of SED-STRAT Geoscience Consultants, Inc. Since October 2005 it has been nearly non-stop consulting for him, proving there is life after 74! Project areas where Klein has completed work include South Texas, East Texas, Permian basin, Russia, the Louisiana Shelf, Alberta basin (Canada), San Joaquin basin (California), and Galveston Bay, Texas.

Geology librarian **Lura E. Joseph** received the Best Paper Award given by the Geoscience Information Society for her paper "Image and Figure Quality: A Study of Elsevier's Earth and Planetary Sciences Electronic Journal Back File Package." The paper was published in *Library Collections, Acquisitions, & Technical Services*.

John Kolinski, an undergraduate researcher in geological fluid mechanics who has worked closely with Professor **Susan Kieffer** for the past two summers, was selected as one of the top four presenters from Illinois's Undergraduate Research Opportunities Program sponsored by the Illinois Space Grant Consortium. The ISGC subsequently sponsored his participation in the Great Midwestern Regional Space Grant Conference held at Purdue University in September 2007.

Professor **Jim Best** gave three keynote addresses in 2007. Two covered his work on Argentinean rivers: one was given at the USGS National Surface Water Conference & Hydroacoustics Workshop held in St. Louis and the other was given at the Workshop on Morphodynamic Processes in Large Lowland Rivers held in Sante Fe, Argentina. He also delivered a keynote address to the 2007 Hydraulic Measurements & Experimental Methods Conference (HMEM), held in Lake Placid, New York and sponsored by the American Society of Civil Engineers' (ASCE) Environmental and Water Resources Institute (EWRI) and The International Association of Hydraulic Research (IAHR).

Degrees Conferred in 2007

Bachelor of Science Degrees

May
Mark Danielson
Lauren Feiter
Steven Keown

August
Elizabeth Armstrong
Rivkah Cooke
Eric Kiser
Brandon Weinberg
Joshua Welch

December
Phillip Swartz
Erica Toledo

Master of Science Degrees

May

Wei Dai, *Teleseismic Earthquake Waveform Doublets from South Sandwich Islands Subduction Zone: Spatial and Temporal Distributions and Implications for Inner Core Rotation* (Xiaodong Song)

Joshua Defrates, *Crenulation Cleavage and Down-Dip-Verging Mesofolds in the Precambrian Baraboo Syncline, South-Central Wisconsin* (Stephen Marshak)

August

Shane Butler, *A Facies-Constrained Model of Pleistocene Travertine Deposition and Glaciation in the Northern Yellowstone Region* (Bruce Fouke)

Adam Ianno, *Differentiation Mechanisms in Zoned Plutons: Insight from Non-Traditional Stable Isotopes* (Craig Lundstrom)

Emily Wisseman, *Bacteria as Sensitive Indicators of Coral Reef Health: Bacterial Community Shifts across Coral Reef Environmental Gradients* (Bruce Fouke)

December

Melissa Chipman, *A Paleolimnological Record of Climate Change Over the Past 2000 Years at Ongoke Lake, Southwest Alaska* (Feng Sheng Hu)

Doctor of Philosophy Degrees

May

Michael Kandianis, *Modeling Departures from Abiotic Expectations During the Calcium Carbonate Precipitation Process* (Bruce Fouke)

Dmitry Lakshtanov, *Elasticity and Phase Transitions of Stishovite and NaCl at High Pressure* (Jay Bass)

Xinlei Sun, *Three Dimensional Inner Core Anisotropy, Lowermost Mantle Structure, and Inner Core Rotation* (Xiaodong Song)

Tai-Lin Tseng, *Seismic Studies of the Mantle Transition Zone* (Wang-Ping Chen)

October

Jorge Marino, *Paleogeothermal Conditions in the Illinois Basin during Late Paleozoic Coalification* (Steve Marshak)

December

Scott Clark, *Selenium Stable Isotope Ratios in Wetlands: Insights into Biogeochemical Cycling and How a Diffusive Barrier Affects the Measured Fractionation Factor* (Tom Johnson)

Fang Huang, *Studies of Magmatism by Trace Element Partitioning between Clinopyroxene and Silicate Melt, U-Series Disequilibria in Lavas from Subduction Zones, and Non-traditional Stable Isotopes* (Craig Lundstrom)

Obituaries

Reverend Robert L. Brownfield (MS '55) died January 16, 2007 at the age of 88. He retired from the Illinois Department of Highways in 1985 where he worked as a geologist and civil engineer. In 1992 he was ordained as a Catholic priest.

Paul Clawson (BS '55) died May 11, 2007 at the age of 81. After serving in World War II and Korea, Clawson earned his degree from Illinois and eventually founded Geothermics, Inc., a company that drilled shallow wells for irrigation and provided geological consulting services.

Willis M. Decker (BS '39) died January 10, 2007 at the age of 91. He worked for Cities Service Oil Company in Tulsa for 39 years and went on to become vice-president of Jett Oil Company until 1983.

Robert L. Glossop (BS '52) died July 12, 2007 at the age of 77. He owned Glossop Oil and Gas Company.

Richard Thomas Hercher (BS '50) died January 7, 2007 at the age of 77. Hercher was an independent consulting geologist who spent 25 years participating in the exploration and development of oil and gas production in Colorado and Nebraska.

James Francis Luhr (BS '75) died January 1, 2007 at the age of 53. Luhr was director of the Global Volcanism Program at the Museum of Natural History, Smithsonian Institution.

Joseph Morgan (BS '50) died September 24, 2007 at the age of 80. After receiving his master's degree from the University of Wyoming, Morgan worked as a geologist in the oil and gas industry.

John Matkin Richart (BS '57) died March 16, 2007 at the age of 77. Richart served with the Navy during the Korean War, and after graduation was hired by Pure Oil Company where he worked for 29 years.

Mary Barnes Rolley (MS '48) died on August 5, 2007 at the age of 86. Rolley worked at the Illinois State Geological Survey before relocating to California and working as a draftswoman for North American Aviation and raising her family.

Edward Shover (PhD '61) died October 28, 2007 at the age of 71. He worked as a geologist in the aerospace and petroleum industries in and around Houston, Texas.

Adler Spotte (BS '40, MS '41) died January 11, 2007 at the age of 92. The son of a coal miner, Spotte grew up in Staunton, Illinois. After volunteering to serve in the Navy during World War II, Spotte built a career leading a number of coal companies in Virginia, West Virginia, and Kentucky.

Allen W. Waldo (AB '27, MS '28) died March 14, 2007 at the age of 102. He taught geology at the College of the Pacific and Stockton College and spent summers as a ranger naturalist in Yosemite and Crater Lake National Parks.

Meggan Kathleen Weeks (BS '96) died June 25, 2007 at the age of 33. At the time of her death she was working toward her master's degree in materials science and engineering from the University of North Texas.

Roy Edward Williams (PhD '66) died April 6, 2007 at the age of 69. While earning his Ph.D. at Illinois, Williams worked as a research assistant at the Illinois State Geological Survey.

Roger Glen Wolff (MS '60, PhD '61) died on January 1, 2007 at the age of 74. He worked his entire career at the United States Geological Survey. Before he retired he served as the chief of the Office of Hydrologic Research.

1960s

David L. Gross (MS '67, PhD '69) was appointed by the Governor of Illinois and confirmed by the Illinois State Senate to the geologist position on the Board of Natural Resources and Conservation, the governing board for the Illinois State Geological Survey, the Illinois Natural History Survey, the Illinois State Water Survey, and the Waste Management and Research Center. David is a senior geologist emeritus at the Illinois State Geological Survey where he still maintains an office. He currently serves as an outside director and chairman of First State Bank in Beardstown, Illinois.

1970s

John Morrone (BS, '79) hails from the Colorado office of the Bureau of Land Management. As baby-boomers retire, he anticipates numerous vacancies throughout BLM offices which are now offering many student internships. John also would like to see more of his contemporaries participate in Departmental receptions at national meetings so he can catch up with old friends and colleagues.

Carl Steffensen (BS '79) and **Patricia Santogrossi** (BS '74, MS '76) have both been elected members of the AAPG House of Delegates (AAPG's legislative body) for three year terms (2007-2010) representing the Houston Geological Society.

1980s

Lawrence L. Fieber (BS, '83) has worked for the Chicago branch of Burns and McDonnell, a major engineering consulting firm, for eight years now. He recently visited the Department for the first time in ages and brought with him the news that there is a great deal of demand for geotechnical and environmental geologists in the Chicagoland area. Burns and McDonnell is doing some serious recruiting at UIUC at the moment and Lawrence would love to see more alumni from the Department join him in the Chicago office.

Colloquium Speakers for Spring and Fall 2007

Spring 2007

Jan. 19
Mark H. Anders, Columbia University
The Normal Fault Paradox: Getting to the Root of the Problem

Jan. 26
Wendy Panero, Ohio State University
Water Transport and Storage of Water in the Earth's Lower Mantle

Feb. 2
Alan Boudreau, Duke University
The Evolution of Texture and Layering in Layered Intrusions

Feb. 9
Steve Jacobsen, Northwestern University
Earth's Deep Water Cycle: The Emerging Picture from Mineral Physics

Feb. 16
Eric Roden, University of Wisconsin
Geochemical Controls on Microbial Fe(III) Oxide Reduction Kinetics

Feb. 23
Chuck Langston, University of Memphis
The Scientific Mystery of the New Madrid Seismic Zone

Mar. 2
Timm Strathmann, UIUC Environmental Engineering
Rapid Reduction of Aquatic Contaminants by Organically Complexed Iron (II) Species

Mar. 9
Alan Howard, University of Virginia
Sedimentary Landforms on Mars: Fluvial, Lacustrine, Eolian, and Possibly Oceanic

Mar. 30
Dave Bish, University of Indiana
Water on Mars: Can Hydrous Minerals Explain Observed Martian Surface Water?

Apr. 5
Laura Crossey, University of New Mexico
CO_2 Mound Springs and Travertines of the Western U.S.: Towards a Model for Continental "Smokers"?

Apr. 13
Davis Blowes, University of Waterloo
Permeable Reactive Barriers for Treating Groundwater Contaminated by Dissolved Metals

Apr. 20
Mike Ritzwoller, University of Colorado
Revealing the Earth's Crust and Upper Mantle in HiDef: An Overview of the State of Ambient Noise Tomography

Fall 2007

Aug. 24
R. James Kirkpatrick, College of Natural Sciences, Michigan State University
Spectroscopic and Computational Studies of Mineral-Fluid Interactions

Aug. 31
Don Wubbles, Executive Coordinator, School of Earth, Society, and Environment (SESE)
The Status of SESE

Sept. 7
Bridget Scanlon, Bureau of Economic Geology, UT Austin
Impacts of Changing Land Use on Subsurface Water Resources in Semiarid Regions

Sept. 14
Pinaki Chakraborty, UIUC Department of Geology
The Rayleigh-Taylor Instability: From Water Falling Out of a Glass to Fire Falling Out of the Sky

Sept. 21
Mark Skidmore, Montana State University
Microbially Mediated Weathering in Subglacial Systems

Sept. 26
Jim Butler, Kansas Geological Survey
Getting the Information Ground Water Modelers Need: A Report From the Field

Oct. 5
Greg Retallack, University of Oregon
Global Greenhouse Crises of the Past

Oct. 12
Henry Scott, Indiana University at South Bend
High-Pressure and Temperature Investigations in the Fe-C and Fe-P systems: Implications for Planetary Interiors

Oct. 19
Ken Wohletz, Los Alamos National Laboratory
Were the Dark Ages Triggered by Volcano-Related Climate Change?

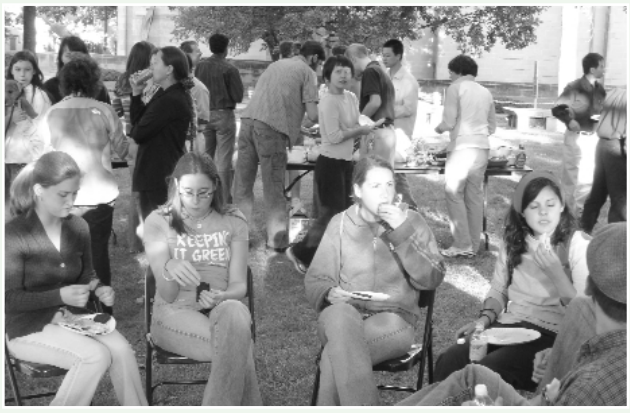
Oct. 26
Gary Pavlis, Indiana University
The Southeast Caribbean Plate Boundary: New Insights from the Bolivar Project

Nov. 2
Craig C. Lundstrom, UIUC Department of Geology
Magma Differentiation in a Temperature Gradient: A Potentially Important Process with an Isotopic Fingerprint

Nov. 9
Frederik Simons, Princeton University
Measuring Geophysical Processes in Space from the Shifting Weight of the Earth: Old Problems, New Methods, New Results

Nov. 30
Darryl Granger, Purdue University
Landscape Response to Tectonics and Climate: A Cosmogenic Nuclide Perspective

From Our Scrapbook



A group of undergraduates gather on the lawn north of the Natural Hisotry Building at the annual Department picnic held on September 14, 2007.

Associate Head of the Department, Professor Chu-Yung Chen joins undergraduate senior Meghan Ori at the Majors and Minors Fair held at the Illini Union in October, 2007

Faculty

Stephen Altaner (Associate Professor)
Alison Anders (Assistant Professor)
Jay Bass (Grim Professor)
Jim Best (Threet Professor)
Craig Bethke (Grim Professor)
Chu-Yung Chen (Associate Professor)
Wang-Ping Chen (Professor and Acting Head)
Bruce Fouke (Associate Professor)
Thomas Johnson (Associate Professor)
Susan Kieffer (Walgreen Professor)
R. James Kirkpatrick (Grim Professor & Senior Executive Associate Dean)
Jie Li (Assistant Professor)
Craig Lundstrom (Associate Professor)
Steve Marshak (Professor and Head—on sabbatical leave until Fall 2008)
Gary Parker (Johnson Professor)
Xiaodong Song (Associate Professor)

Department Affiliate

Marcelo Garcia (Seiss Professor, Civil and Environmental Engineering)
Feng Sheng Hu (Associate Professor; Plant Biology)
Bruce Rhoads (Professor, Department of Geography)

Academic Staff, Post-Docs, Visiting Staff

Geoffrey Bowers (Post-Doctoral Research Associate)
Mariano Cantero (Post-Doctoral Research Associate)
Pinaki Chakraborty (Post-Doctoral Research Associate)
Rocio Fernandez (Post-Doctoral Research Associate)
Justin Glessner (Geochemist)
Holger Hellwig (Research Scientist)
Eileen Herrstrom (Teaching Specialist)
Stephen Hurst (Research Programmer/Geologist)
Andrey Kalinichev (Research Associate Professor)
Michael Kandianis (Post-Doctoral Research Associate)
Michael Lerche (Post-Doctoral Research Associate)
Ann Long (Teaching Specialist)
Xinli Lu (Post-Doctoral Research Associate)
Padma Padmanabhan (Post-Doctoral Research Associate)
Philip Parker (Visiting Research Programmer)
Daniel Saalfeld (Visiting Research Programmer)
Rob Sanford (Senior Research Scientist)
Xinlei Sun (Post-Doctoral Research Associate)
Michael Stewart (Lecturer)
Jonathan Tomkin (Research Assistant Professor)
Tai-Lin Tseng (Post-Doctoral Research Associate)
Sharon Yeakel (Research Programmer)
Paulo Zandonade (Post-Doctoral Research Associate)
Zhaofeng Zhang (Visiting Scholar)
Jianming Zhu (Visiting Scholar)

Adjunct Faculty

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

Emeritus Faculty

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

Library Staff

Lura Joseph (Librarian)
Sheila McGowan (Library Assistant)
Diana L. Walter (Senior Library Specialist)

Department Staff

Michael Sczerba (Clerk)
Marilyn Whalen (Administrative Secretary)

Graduate Students

Anirban Basu
Peter Berger
Charles Bopp
Jon Brenizer
Shane Butler
Bin Chen
Melissa Chipman
Mirona Chirienco
Scott Clark
Rivkah Cooke
Wei Dai
Joshua Defrates
Dong Ding
Xing Ding
Theodore Flynn
Lili Gao
Jessica Hellwig
Carly Hill
Ana Houseal
Fang Huang
Kevin Hughes
Adam Ianno
Meijuan Jiang
Michael Kandianis
Dmitri Lakshtanov
Qi Li
Qiang Li
Daniela Lindner
Vineeth Madhavan
Chris Majerczyk
Jorge Marino
Chris Mead
Charlie Mitsdarfer
Mara Morgenstern
Jessica Palmer
Mauricio Perillo
Alan Piggot
Geoffrey Poore
Amanda Raddatz
David Robison
Pragnyadipta Sen
Ivan Ufimtsev
Holly Vescogni
Jingyun Wang
Nathan Webb
Emily Wisseman
Kevin Wolfe
Zhen Xu
Zhaohui Yang

COURSES TAUGHT IN 2007

GEOL 100	Planet Earth
GEOL 101	Introductory Physical Geology
GEOL 103	Planet Earth QRII
GEOL 104	Geology of the National Parks
GEOL 107	Physical Geology
GEOL 108	Historical Geology
GEOL 110	Exploring Geology in the Field
GEOL 116	The Planets
GEOL 117	The Oceans
GEOL 118	Natural Disasters
GEOL 143	History of Life
GEOL 333	Earth Materials and the Environment
GEOL 380	Environmental Geology
GEOL 411	Structural Geol and Tectonics
GEOL 415	Field Geology
GEOL 417	Geology Field Methods, Western US
GEOL 432	Mineralogy and Mineral Optics
GEOL 436	Petrology and Petrography
GEOL 440	Sedimentology and Stratigraphy
GEOL 454	Introduction to Seismology
GEOL 460	Geochemistry
GEOL 470	Introduction to Hydrogeology
GEOL 481	Earth Systems Modeling
GEOL 497A	The Sciences and Ethics of Sustainability
GEOL 497AB	Geomicrobiology and Geochemistry
GEOL 497SK	Geological Fluid Dynamics
GEOL 512	Geotectonics
GEOL 515	Advanced Field Geology
GEOL 552	Geodynamics
GEOL 553	Chemistry of Earth's Interior
GEOL 560	Physical Geochemistry
GEOL 562	Isotope Geology
GEOL 571	Geochemical Reaction Analysis
GEOL 591	Current Research in Geoscience
GEOL 593	Advanced Studies in Geology
GEOL 593GP	River Morphodynamics
GEOL 593J2	Molecular Modeling of Water
GEOL 593K14	Seismic Interferometry, Diffuse Wave Correlations, & Imaging

Research Grants Active in 2007

AIR FORCE

Xiaodong Song—Characterizing High-Resolution Seismic Velocity and Attenuation Structure of Yunnan-Sichuan Region, Southwest China using Seismic Catalog and Waveform Data.

Xiaodong Song— Surface Wave Dispersion Measurements and Tomography from Ambient Seismic Noise in China.

AMERICAN CHEMICAL SOCIETY

Jonathan Tomkin— The Effect of Late Cenozoic Glaciation on the Evolution of the Olympic Mountain.

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

Thomas M. Johnson—Chromium Isotopes as Indicators of Hexavalent Chromium Reduction.

R. James Kirkpatrick and **Andrey G. Kalinichev**—Computational and Spectroscopic Investigations of the Molecular Scale Structure and Dynamics of Geologically Important Fluids and Mineral-Fluid Interfaces.

Robert Sanford—Biomolecular Mechanisms Controlling Metal and Radionuclide Transformations in Anaeromyxobacter Dehalogenans.

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

EXXONMOBIL UPSTREAM RESEARCH COMPANY

Craig Bethke—Membership in the Hydro-Geology Program Industrial Consortium for Research and Education.

MICHIGAN STATE UNIVERSITY

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

NASA

Susan Kieffer—Multicomponent, Multiphase H_2O-CO_2 Thermodynamics and Fluid Dynamics on Mars.

NATIONAL SCIENCE COUNCIL OF TAIWAN

Wang-Ping Chen—Caucasus Scientific Experiments (CAUSE): An Integrated Study of Active Continental Collision.

NATIONAL SCIENCE FOUNDATION

Jay Bass—Sound Velocities and Elasticity of Deep-Earth Materials at High Pressures and Temperatures.

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

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

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

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

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

Bruce Fouke—NSF Research Experience for Middle School Teachers at Mammoth Hot Springs, Yellowstone National Park.

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

Susan Kieffer—Multiphysics Modeling and Terascale Simulations of Volcanic Blasts Over Complex Terrains.

Jie Li—Constraints on Core Composition from Nuclear Resonant Scattering and X-Ray Diffraction Studies on Fe-Light-Element Compounds.

Craig C. Lundstrom and **Stephen Marshak**—Assessing Diffusive Differentiation during Igneous Intrusion Using Integrated Theoretical Experimental and Field Studies.

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

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

Jonathan Tomkin—Collaborative Research: Glacial Erosion in the Patagonian Andes; Testing the Buzzsaw.

OFFICE OF NAVAL RESEARCH

Bruce Fouke and **Milton McAllister**—Microbiological, Physiological, and Toxicological Effects of Explosive Compounds on Coral Health.

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

THE RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK

Jay Bass—High-Resolution Inelastic X-ray Scattering at High P & T: A New Capability for the COMPRES Community.

SANDIA NATIONAL LABORATORY

Craig Bethke—Software Licenses for Geochemist Workbench.

SCK.CEN

Craig Bethke—Membership in the Hydro-Geology Program Industrial Consortium.

SHELL INTERNATIONAL EXPLORATION AND PRODUCTION

Gary Parker and **Garcia Marcelo**—Channelization by Turbidity Currents in Submarine Fairways and on Fans.

UNIVERSITY OF ILLINOIS

Wang-Ping Chen—Building Infrastructure for Space-Based Geodesy.

Bruce Fouke—Calcium Carbonate ($CaCO_3$) Biomineralization: The Geologic Record of Biological Responses to Rapid Environmental Change.

From Our Scrapbook

More than 100 guests attended the joint UI-IU alumni reception at the Annual Meeting of the Geological Society of America in Denver. In the foreground, Chuck Norris (BS '69) and his wife greet Keros Cartwright (PhD '73).

List of Publications for 2007

Andrews A.H., Lundstrom C.C., Cailliet G.M., and DeVogelaere A.P. Investigations of bamboo coral age and growth from Davidson Seamount. *Technical Report Monterey Bay*. National Marine Sanctuary.

Andrews A.H., Kerr L.A., Cailliet G.M., Brown T.A., Lundstrom C.C., and Stanley R.D. Age validation of canary rockfish (Sebastes pinniger) using two independent otolith techniques: lead-radium and bomb radiocarbon dating. *Marine and Freshwater Research*, 58: 531-541.

Anders A.M., Roe G.H., Durran D.R., and Minder J.R. Small-scale spatial gradients in climatalogical precipitation on the Olympic Peninsula. *Journal of Hydrometeorology*, 8: 1068-1081.

Ashworth P.J., Best J.L., and Jones M. The relationship between channel avulsion, flow occupancy and aggradation in braided rivers: insights from an experimental alluvial basin, *Sedimentology,* 54: 497-513.

Bass J.D. Mineral Physics: Techniques for measuring high P/T elasticity. In G.D. Price and J. Schubert (Eds.), *Treatise of Geophysics* (pp. 269-292). Amsterdam: Elsevier B.V.

Best J., Ashworth P., Sarker M.H. and Roden R. The Brahmaputra-Jamuna River, Bangladesh, In A. Gupta (Ed.), *Large Rivers: Geomorphology & Management* (pp. 395-430). Wiley.

Bethke C.M. *Geochemical and Biogeochemical Reaction Modeling*. Cambridge: Cambridge University Press.

Cantelli A., Wong M., Parker G., and Paola C. Numerical model linking bed and bank evolution of incisional channel created by dam removal. *Water Resources Research,* 43(7), W07436, 16 p.

Chatanantavet P., Parker G., Lajeunesse E., Planton P., and Valla P. Physically-based model of downstream fining in bedrock streams with side input and verification with field data. *Proceedings*, River, Coastal and Estuarine Morphodynamics, 5th IAHR Symposium (RCEM 2007), Enschede, the Netherlands 17-21, 8 p.

Chen B., Gao L., Funakoshi K.-i., and Li J. Thermal expansion of iron-rich alloys and implications for the Earth's core. *PNAS,* 104(22): 9162-9167, doi 10.1073/pnas.0610474104.

Chen W.-P. and Brudzinski M.R. Repeating earthquakes, episodic tremor and slip: Emerging patterns in complex earthquake cycles? *Complexity*, 12 (5): 33-43, doi:10.1002/cplx.20185.

Chen W.-P. and Tseng T.-L. Small 660-km seismic discontinuity beneath Tibet implies resting ground for detached lithosphere. *Journal of Geophysical Research*, 112: doi:10.1029/2006JB004607.

Courtier A.M., Jackson M.G., Lawrence J. F., Wang Z.-R., Lee C.-T. A., Halama R., Warren J.M., Workman R., Xu W.-B., Hirschmann M.M., Larson A.M., Hart S.R., Lithgow-Bertelloni C., Stixrude L., and Chen W.-P. Correlation of seismic and petrologic thermometers suggests deep thermal anomalies beneath hotspots, *Earth and Planetary Science Letters*, 264(1-2): 308-316.

Huang F. and Lundstrom C.C. 231Pa excesses in arc volcanic rocks: Constraint on melting rates at convergent margins, *Geology*, 35: 1007-1010.

Gajda A. and Kieffer S.W. Celebrity meets Science: Hollywood's environmentalism and its effect, *GSA Today*, 17(10): 44-45.

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