

Department of Geology

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



Professor Susan Kieffer Joins Faculty

The Department of Geology is pleased to announce that Dr. Susan Werner Kieffer has been hired as Walgreen Chair and Professor of Geology at the University of Illinois. She is the first to hold this prestigious position.

Kieffer, who describes her primary research interest as geological fluid dynamics, has had a widely varied research career. She developed a theory for predicting the thermodynamic properties of minerals, work that earned her the Mineralogical Society of America's award for distinguished work

in mineralogy. Later, she started to look at geysers as analogs for volcanoes. When geysers were discovered on Jupiter's satellite, Io, she applied her earthbound research

to interpret those phenomena. For many years, Kieffer studied rapids on the Colorado River in the Grand Canyon. She has also studied the eruption of Mount Saint Helens and developed a theory of the devastating lateral blast.

"I had to teach myself rocket nozzle theory to explain the tree-blow-down pattern that we observed at the mountain," says Kieffer.

More recently, she has focused on the 65-million-year-old Chicxulub (Mexico) impact crater and the 1.8 billion-year-old Sudbury (Canada) crater. Using shock-wave theory, Kieffer and colleagues hypothesize that the former was formed by an asteroid impact and the latter a comet. All these projects involve understanding processes that can occur at very high speeds — sometimes even supersonic —

compared to most geological processes.

"My geologic interests parallel my music interests," Kieffer has said. "When I had to practice as a kid, I skipped the slow movements and went right for the scherzos."

Culminating with a Ph.D. from Cal Tech, Kieffer holds degrees in physics, math, geological sciences, and planetary sciences. This background gives her the technical expertise to pursue any question that catches her eye. While some questions may appear to others to be

unrelated to what she's been working on, there's usually a unifying thread.

"My career could be summarized by saying I look at complex and catastrophic events," says Kieffer.

Keiffer feels that UIUC is a good fit for her interests. "When I visited Urbana-Champaign, the possibility for interactions among geology and several other campus departments was wonderful."

Kieffer's professional accomplishments are reflected in part by her various high-level honors and achievements. For example, she is a recipient of the John D. and Catherine T. MacArthur Fellowship (the prestigious "genius award"), a member of the National Academy of Sciences, a recipient of the Spendiarov Award from the USSR Academy of Sciences (the second American ever to receive this honor), and recipient of the Day Medal from the Geological Society of America.

Over the years, Kieffer has served several institutions including the U.S. Geological Survey, Arizona State



The Walgreen Chair— A Mark of Distinction

The Walgreen Chair, now held by Susan Kieffer in the Department of Geology, is a major honor at the University of Illinois, not just for the faculty member who receives it, but for the Department that hosts it as well. Any department on any of the three University campuses can compete to host the position by submitting nominees. There are only two Walgreen Chairs in the entire University—the second current Chair holder is in the Law School.

Funding for the Chair comes from the Charles R. Walgreen Jr. Endowment fund, established by Charles R. Walgreen Jr., the retired chairman of the board of the Walgreen Drug Store company. Mr. Walgreen stipulated that candidates for the Chair must display intellect and accomplishment that places them among those most distinguished people in their field. This distinction must be affirmed by such recognition as Nobel or Pulitzer Awards or by evidential works. Among her other accomplishments, Kieffer has won the MacArthur "genius" award.

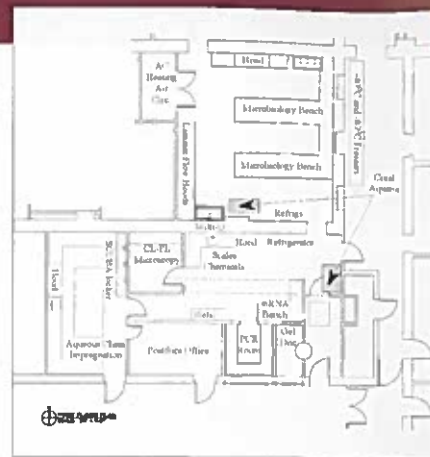


GREETINGS

Letter From The Head

2002 has been a year of change in the Department and in the University as a whole. We have been fortunate to have Prof. Susan Kieffer (Ph.D., Cal Tech), joins our ranks as the Walgreen Chair. Sue brings great distinction to the Department, for she is world renowned for her work in geological fluid dynamics, and has received many significant honors, including election to the National Academy of Sciences, and a MacArthur "genius" award. Already, Sue has been building links between the Department and other units across campus. As this issue goes to press, another new faculty member, Prof. Jackie Li

(Ph.D., Harvard), has also joined us. She will begin teaching mineralogy in the fall, and will be building a lab for high-pressure mineral research. We have also been growing by the addition of research scientists to our staff. Andrey Kalinichev and Stas Sinogeiken are immersed in their studies of mineral science, and by next fall, Holger Hellwig will commence research in crystallography, while Rob Sanford will join the geomicrobiology group. The Department has been fortunate to see the completion of a state-of-the-art laboratory in geomicrobiology and carbonate sedimentology, under the supervision of Prof. Bruce Fouke. And . . . our



Construction of the new geomicrobiology facility is now complete and the lab open for business. Carved out of former office space in the basement of the Natural History Building, the 2000-square-foot geomicrobiology lab enables researchers to conduct DNA and RNA analyses of microbial communities in order to understand their interactions with geologic processes. Students and postdocs from the Fouke, Bethke, Johnson, and Lundstrom research groups in the department are now actively engaged in conducting research in the facility. Rob Sanford will also be using this facility when he joins the department next fall.

GeoScience 2005 endowment campaign also continues to charge ahead — we are well on the way toward our \$3 million goal!

But the good news is tempered with the not so good. The University of Illinois, like most state universities across the country, has been hit hard with budget cuts in response to deficits at the state and federal levels. As a consequence, the rate of growth that we have enjoyed in the past few years will be slowing, and the Department will face new challenges in the coming year. But with continued support of alumni and friends, we hope to continue on a positive track, providing outstanding education for undergraduates and graduates, and contributing new ideas to the broadening field of geosciences.

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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.

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Leinen Receives Alumni Achievement Award

Margaret Leinen, B.S. '69, assistant director of the National Science Foundation for Geosciences, has been awarded the Outstanding Alumni Achievement Award in the Department of Geology.

Leinen, who has been at NSF since 2000, administers all NSF programs in earth, atmosphere and ocean sciences. She is also in charge of a new interdisciplinary program in environmental research and education. In this role, she works with people from such diverse disciplines as biology, chemistry, engineering, and social, behavioral, and economic sciences to fashion environmental research programs.

Prior to taking a senior position at NSF, Leinen was a professor of oceanography and dean of two colleges (the Graduate School of Oceanography and the College of the Environment and Life Sciences) at the University of Rhode Island. In addition, she served as vice provost, with the responsibility of coordinating marine and environmental programs for the entire university.

Leinen's own research has focused on paleoceanography, paleoclimatology and the present-day processes that are responsible for the formation of the sedimentary record. She has had a very active sea-going research program, having been on 24 research cruises, including three cruises of the Ocean Drilling Program. She has led two ALVIN diving expeditions to the Juan de Fuca Ridge and Mariana back-arc environments to study the sedimentation from hydrothermal vents and has published widely on the record of biological sedimentation in the oceans.

In addition to her bachelor's degree from the University of Illinois, Leinen has a master's in geological oceanography from Oregon State University in 1975, and a Ph.D. in geological oceanography from the University of Rhode Island in 1980.



MICHAEL SALERNO

...it was muddy and it was cold, and they were right there with us. So when we were all freezing on the outcrop, they were freezing on the outcrop...I had never had that type of relationship with a scientist or with a teacher. They were actually doing the same thing I was doing. It was very, very exciting."

Leinen has very fond memories of geology at Illinois. She had come intending to be a biochemist, but those classes were so large they were alienating. The only class smaller than 400 students was Leinen's geology class, with an enrollment of 100.

"I actually got to know the faculty member and I got to know the graduate student who was assisting," Leinen recalls. "And they took us out on field trips on the weekend. We all went out and our professor was there, and five or six graduate students were there to keep us all in line. It was fall term, it was winter in Illinois, and it was snowing, and it

was muddy and it was cold, and they were right there with us. So when we were all freezing on the outcrop, they were freezing on the outcrop. When we were all sitting in the bus huddled with our lunches, they were right there with us. I had never had that type of relationship with a scientist or with a teacher. They were actually doing the same thing I was doing. It was very, very exciting."

Leinen will return to the Urbana-Champaign campus during the Fall of 2003 to receive the award.

Susan Kieffer *Continued from page 1*

University, Cal Tech, and the University of British Columbia. Just prior to coming to Illinois, she ran her own consulting firm in Canada, S.W. Kieffer Science Consulting, Inc., to develop nonlinear data analysis and prediction techniques. She also has founded the Phoenix-based Kieffer Institute for Development of Science-Based Education, which focused on teaching science to at-risk 7th to 12th graders.

Recently, Kieffer has been concerned about issues of sustainability and the role of Earth sciences and Earth scientists in getting our planet through the next 50 years in a healthy condition. She hopes to teach a course in this area.

"We scientists tend to be relatively ineffective politically," says Kieffer, "so I was thrilled when asked to become an affiliate in the Institute for Government and Policy Affairs on this campus. We are discussing how we can bring issues of natural sciences to the table with lawyers, political scientists, economists, and social scientists."

Kieffer's passion for research and teaching will benefit our students and the university community as a whole. The Department is delighted to welcome Susan and her husband, Charles Harwood, to the Urbana-Champaign community.

Albert Hsui Develops New Course

The Geology Department is offering a new course for non-majors. Geology 103 (Planet Earth-Quantitative Reasoning) will use the study of geology as a vehicle to introduce mathematics and computers to non-science students and to show them how quantitative reasoning can be used to understand and describe natural phenomena. The course was designed to fulfill a new University requirement.

The course will be taught by Prof. Albert Hsui in the spring 2003. In addition to the two lectures students receive a week, they will have one session per week in a new state-of-the-art computer lab. Using the facilities of the lab, they will work with geologic data using spread sheets and graphing programs. Geologic problems provide an excellent base for teaching quantitative reasoning, because they are very tangible and intuitive.

Bass Elected as First President of COMPRES

In May of 2002, the National Science Foundation launched the Consortium for Materials Properties Research in Earth Sciences (COMPRES), a community infrastructure organization for Earth science research and education, focusing on high-pressure experiments designed to understand Earth and planetary interiors. Jay Bass, professor of geology, was elected as the new consortium's President, a full-time salaried job. The offices of the consortium are housed at SUNY Stony Brook, so Bass took a one-year leave of absence for the 2002-2003 academic year and is shuttling back and forth between Stony Brook and Champaign-Urbana.

"It is very exciting, and quite an honor to be chosen to get the consortium off the ground in its first year," said Bass.

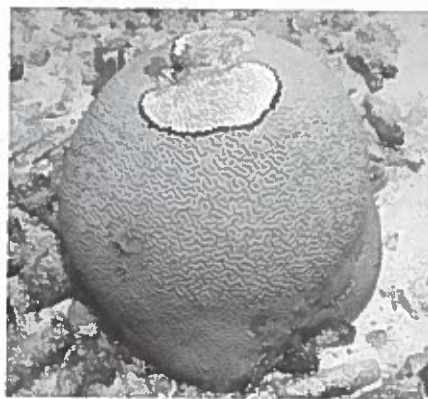
The goal of the consortium is to facilitate high-pressure research in Earth and planetary sciences using advanced instrumentation at centralized facilities, education and outreach, and connections with other Earth science subdisciplines. COMPRES will identify and address common research needs, present a unified vision of the high-pressure Earth sciences, work to provide access to synchrotron beamlines and other community facilities, coordinate the management of large centralized facilities, and advocate the field of high-pressure research within the broader Earth and planetary sciences community. The consortium hopes to determine, as a community, where multi-million dollar research resources can most wisely be placed and used.

Chromium in Groundwater Studied

Professor Tom Johnson and graduate student Andre Ellis have developed a way to monitor the mobility of chromium in groundwater. Chromium, a heavy metal commonly used in industrial applications such as electroplating and leather tanning, is the second-most abundant inorganic groundwater contaminant at hazardous waste sites. The oxidized, hexavalent state of Cr, Cr (VI), is toxic and soluble, so it can move easily in groundwater. The reduced state, Cr (III) can form a solid, precipitating out of solution, thus limiting its mobility. Also, Cr (III) is less toxic, and is a nutrient at low levels.

Johnson and Ellis's new work relies on measurements of the $^{53}\text{Cr}/^{52}\text{Cr}$ isotope ratio—to determine this ratio the researchers had to develop new laboratory techniques. They found that the $^{53}\text{Cr}/^{52}\text{Cr}$ ratio increases systematically as Cr (VI) is reduced. Their observation was published in the March 15, 2002, issue of *Science*, and has captured the attention of consultants trying to characterize chromium-contaminated sites.

National Geographic Visits Geology Department



Bruce Fouke's research on black band disease, which is a bacterial infection in coral, caught the attention of the National Geographic Society this year. Writers for the magazine first contacted him last spring, having surfed the web

for researchers working on coral disease. An underwater photograph of diseased coral taken by the Fouke research group was published in the map insert of the September 2002 issue of the magazine. The writers and a film crew then visited Urbana-Champaign last fall where they were given a full tour of the department's new geomicrobiology lab facility. A documentary is now being assembled describing the newly emergent field of geomicrobiology and the work being done in the Fouke lab on the hot springs of Yellowstone National Park and the coral reefs of the Caribbean and Indo-Pacific. Fouke's research is funded by the Office of Naval Research Environmental Toxicology and Genetic Markers program and by the National Science Foundation Biocomplexity in the Environment program.



Project "Hi-Climb" Rises in Nepal

Professor Wang-Ping Chen spent two and a half months in late 2002 installing 75 seismometer stations throughout Nepal as the first phase of Project HI-CLIMB kicked in. (see *Geoscience 2000* for details on Chen's research). Ultimately, the project will collect data from 250 stations throughout Nepal and Tibet.

HI-CLIMB examines how the lithosphere deforms over its entire thickness during orogeny; specifically how the upper crust couples with the mantle portion of the continental lithosphere. Chen's project will provide the first complete profile of the Himalayan-Tibetan collision zone, extending from the the deformation front across both the Lower and the Higher Himalayas, then onto the central Tibetan Plateau. Dense spacing—about five kilometers apart—of the broad-band, high-resolution seismic array provides unprecedented resolution for imaging deep-seated structures, particularly those in the enigmatic lower crust, below the Moho, and throughout the transition zone of the mantle down to depths of about 1,000 km.

Installing seismic arrays is back-breaking work. By the end of his stay in Nepal, Chen lost about 15 pounds and his work pants were in shreds—he ultimately cut them into shorts, then tossed them. Setting up a single station took a team of three or four people at least one day. The group had carry all the instruments (including two or more 50-pound batteries) over rugged ground. Then, they dug an enormous pit to bedrock, laboriously leveled both the pit and the instrument, installed and insulated the instrument, and dug a drainage ditch. Finally, they covered everything back up with plywood, tarp and dirt.

For each station, Chen also had to get permission from the government and to negotiate with whoever owned the land. One time Chen and his party walked into a village entirely controlled by Maoist insurgents. Luckily, the Nepali scientists on the team managed to extricate the group.



Professor Chen with undergraduate Nathan VanHoudnos at site H0230, elevation 7,500 ft.

"We skipped that site. We were just happy to be alive," notes Chen.

The project has been successful, for the stations are continuously recording ground vibrations, and will accumulate several terabytes of information in three years. That data is assembled in Katmandu, sent to a dedicated machine at the University of Illinois to be processed by two of Chen's students, Tai-Lin (Ellen) Tseng and Zhaohui Yang. Chen plans to go to Tibet in the spring of 2003 to continue the installations.

"We're either incredible heroes or incredible fools," said Chen, with a grin.



The 2002 annual banquet featured, for the first time, a poster session by geology students. Over 25 students presented posters describing their research, during the cocktail hour. In this photo, Chuntao Liang asks a question, while Ellen Tseng smiles for the photographer.



Geologists' tent camp on a glacier, with a nunatak (isolated hill) in the background.

and the group was stuck on an outcrop so long that they had to open their survival bags to get food.

Overall, the weather was reasonable, with temperatures hovering between 10° and 15°F (it was summer, after all!) so field work could progress. But wind chill was a challenge, and in mid-January, a large storm moved in, creating white-out conditions that forced the group to remain in their tents for five days straight.

Marshak points out that “many people think that Antarctica is completely covered by snow and ice. But there are good exposures in the Transantarctic Mountains, and there's no vegetation to hide the rocks, so it's possible to see contacts quite clearly. Exposures are good, but getting to them can be difficult. Working in Antarctic conditions turns any field work into an adventure.”

Winter “Break” in Antarctica

A second faculty member (Dan Blake is the first) has crossed the Antarctic Circle in the past two years. Steve Marshak visited Antarctica during the 2002-2003 winter break as part of a research group led by Tom Fleming of the University of Southern Connecticut. Their purpose was to study the emplacement of the Ferrar Dolerite, an extensive system of 184 million-year old dikes and sills. In addition to Marshak and Fleming, the group included Alan Whittington (a former post-doc in the Department, now an assistant professor at the University of Missouri), a professional mountaineer, and two undergraduate students. The Ferrar Dolerite, a system of sills and dikes formed in association with the break up of Pangaea, was first recognized during Captain Scott's ill-fated trip to the South Pole in the early 20th century.

“The outcrops we studied were in the Transantarctic Mountains, a 2- to 4-km high range that divides the continent into East and West Antarctica,” says Marshak. “We were flown in a small plane from McMurdo Station (the main American base) to a site on a glacier at the boundary between the Polar Plateau and the Mountains. There, we set up a six-person tent camp. We had to keep rebuilding snow walls to keep drifts from burying our camp, but otherwise it was reasonably comfortable.”

The group used snowmobiles and sledges to get to nearby outcrops, where the mountaineer helped them climb, set ropes and avoid crevasses. For outcrops far from camp the group had helicopter support. The helicopter would drop them at a site, and would then hopefully return about eight hours later. One time the helicopter was grounded in McMurdo by bad weather



Geology Club Re-established

The Geology Club has been re-established by undergraduates Amy Luther (president) and Roger Bannister (vice president and treasurer). This past semester undergraduate Meghan Ward joined the club as secretary. The club is both academic and social and is intended for “any student with a thirst for knowledge about the planet Earth and the impact geology has on our everyday lives,” says Bannister. It encourages interactions between faculty, graduate students and undergraduates.

The club sponsors weekly talks by department professors that are presented at a more relaxed and less intimidating level than the Friday colloquium lectures. The group has organized a rock climbing field trip. Future plans include camping trips and helping at the Science Olympiad.



Jim Granath, Ted Labotka and Dianne Moore cooking breakfast, Monument Valley, UT, 1971 Geology Club field trip.



Graduate Student Following in Wanless' Footsteps

Kurt Burmeister, a Ph.D. student in structural geology under the supervision of Prof. Stephen Marshak, is following in some mighty big footsteps. He is studying the along-strike relationships between changes in the relative thickness and strength of stratigraphic units involved in deformation and transitions in the geometry of structures in fold-thrust

belts. As part of this research, Kurt mapped a region in the Appalachian fold-thrust belt of eastern New York State historically known as the Rosendale natural cement region. This region is famous because of its dolomitic limestone, which



Left: Harold Wanless (first on left) with his work party (1920) standing in front of Mrs. Schinnen's Lodging and Boarding House on Main Street in Rosendale. Right: (left to right) Professor Russell Waines of SUNY, New Paltz, Dietrich Werner, President of the Century House Historical Society, and Kurt Burmeister standing in front of the same building, which is now a cigar making company (2002).

was a primary source of high-quality natural cement from 1850s-1950s. Rosendale natural cement, which is much stronger than Portland cement, lines the Panama Canal, forms the pedestal of the Statue of Liberty, and supports the wings of the US

Capitol building. Coincidentally, this region is where the legendary Prof. Harold Wanless conducted some of his earliest field studies. In the early 1920s, Wanless wrote a voluminous master's thesis on the stratigraphy of the Silurian and Devonian strata of the Rosendale area. Wanless' thesis includes numerous photographs of many of the long-abandoned cement

quarries that have since become overgrown. Burmeister has had fun identifying sites from Wanless's old photos—in some cases, the photos show critical geologic relationships that are no longer exposed and thus are of great help.

Important Discoveries by Jin and Bethke

Graduate student Qusheng Jin and Professor Craig Bethke have developed an important new equation to predict how fast bacteria can degrade contaminants in natural environments such as groundwater. Their work was published in the *Biophysical Journal*.

"If you want to predict how fast a common groundwater contaminant can be degraded, you could run an experiment in the lab. But the experiment would not necessarily indicate how fast the reaction would occur in nature. I am trying to answer the second question with my work," says Jin.

The new equation allows laboratory data to be extrapolated to explain phenomena in real-world environments by taking into account the fact that in real-world environments there is not always an abundant energy supply available for bacterial metabolism. To develop the

equation, they had to take into account geochemical reaction mechanisms, chemiosmotic theory, and non-equilibrium thermodynamics. Chemiosmotic theory explains how respiration proceeds in microorganisms, and non-equilibrium thermodynamics how reaction rates are controlled by the amount of energy that is available.

"The thermodynamic part is very important because energy availability is a key difference between lab and natural environments," notes Jin.

Jin and Bethke were able to test their theory by predicting reactions that could be compared with data sets collected in nature. Since publishing the paper, Jin has received numerous telephone calls from researchers interested in applying the equation to specific environmental conditions. Jin and Bethke have several additional papers scheduled

for publication in which they show how the equation can be applied.

Work on this project was a major change in research direction for Jin, who originally came to Illinois intending to work on traditional groundwater modeling. But with Bethke's encouragement, Jin took extra classes in biochemistry, civil engineering, and microbiology. These classes have allowed him to undertake groundbreaking interdisciplinary research projects. He also took advantage of the diversity of faculty on the UIUC campus and found people in several departments with whom he could discuss his research.

"I was helped by many professors on this campus," says Jin, "especially Robert Sanford in Civil Engineering and James Imlay in Microbiology. They encouraged me and spent hours talking to me. Their help was indispensable."



T.T. Quirke

The First World War profoundly affected geology at Illinois. Both staff and resources were diverted to the war effort, checking growth in the Department's programs. In fact, five faculty (J.L. Rich, H.F. Crooks, L.E. Kennedy, F.M. Van Tuyl, and C.W. Tomlinson) undertook war-related work, and some of these left the University to do so. On the home front, Departmental staff members were assigned to teach military training classes. For example, before leaving to join the Marine Corps air service, Tomlinson co-taught "Military Mapping and Reconnaissance" with Eliot Blackwelder. Blackwelder, who was Head of the Department, also offered "War Issues" and "Map Reading and Navigation." Tomlinson did not return after the war, but joined the Gypsy Oil Company and went on to a distinguished career in industry, ultimately becoming president of AAPG.

Unfortunately, the war, coupled with stiff competition for new staff, crippling college regulations, and anti-German and anti-Bolshevik bias, blocked Blackwelder from building the Department he wanted. In one case, a professional Chinese Geological Survey geologist was denied admission as a graduate student simply because he had not taken prescribed liberal arts courses. Frustrated, Blackwelder wrote a strongly worded letter of resignation to the President of the University, and left the Department at the end of the 1919 spring term. Two years later he

World War I, Crisis for Geology at Illinois, and T.T. Quirke

By Ralph Langenheim

was Head of the Geology Department at Stanford.

With Blackwelder's resignation, the Department had to find a new leader on short notice. Amadeus W. Grabau, a prominent geologist at Columbia University, voiced an interest, but, perhaps because of his reputed pro-German sentiment, the University did not reply. Grabau went on to Peking University where he became a prominent researcher in tectonics. Finally, in November 1919, the University trustees re-organized the Department as a committee. They then appointed Terence Thomas Quirke chairman and associate professor.

Quirke, led the Department for the next 10 years. He was born in England but emigrated to the United States, where he received university training in North Dakota and Chicago. He then became a geology professor at the University of Minnesota, a position he held for four years. After joining Illinois, Quirke spent 15 summers working in the field for the Geological Survey of Canada. His research on the Huronian, Grenville and Killarnian proved essential to unraveling the Precambrian history of North America. Quirke also contributed papers on mineralogy and on the origin of granite,

and wrote two introductory geology textbooks. Together, Quirke and fellow faculty member William Bayley built a strong program in "hard rock" geology" at Illinois, balancing Savage's strong program in stratigraphy and paleontology.

The Department began a period steady growth and enhancement after the Great War. In 1920, the Department had a staff of nine (professors Bayley, Rolfe and Savage; associate professor and chairman Quirke; assistant professor M.M. Leighton (later, Chief of the ISGS); instructors Yeaton and Hanson; a laboratory helper and a stenographer), and the annual budget was only \$21,500, including salaries. But between 1923 and 1930, the staff grew to 21 people. But even though the War was a shock to the Department, students continued to work towards their degrees and between 1905 and 1922 the Department granted 15 master's degrees (11 of them directed by Savage) and three doctorates. After the war, student numbers increased, so that between 1923 and 1930, 23 received master's degrees and two received Ph.D.s. Throughout these years, the Department covered both the disciplines of Geology and Geography.

Haydn Murray Elected to National Academy of Engineering

Haydn Murray, B.S. '48, M.S. '50, Ph.D. '51, has just been elected to the National Academy of Engineering. Colleagues consider Murray a pioneer in the area of clay mineralogy. The election recognizes Murray's "important contributions to engineering theory and practice," specifically his "pioneering work on the mineralogy and industrial applications of clays." Election to the academy is one of the highest honors an engineer can achieve. Congratulations Haydn!

Former Faculty and Alumni Receive Major Awards



Norb Cygan (left) presents the Ian Campbell medal (AGI's highest honor) to Frank Rhodes at the GSA annual meeting last October.

Frank Harold Trevor Rhodes received the Ian Campbell Medal, the AGI's most prestigious award. The medal, presented at the GSA Presidential Awards Ceremony in Denver, October 27, 2002 is awarded to a person who exemplifies the accomplishments and widespread influence of that remarkable geoscientist.

Rhodes was a post-doctoral fellow Fulbright Scholar at the University of Illinois from 1950-51, assistant professor from 1954-55 and associate professor from 1955-56, when he moved to the University of Wales. From Wales, he moved to the University of Michigan, and then Cornell, where he served as President for 18 years. He has published widely in the fields of geology, paleontology, evolution, education and the history of science. His publications include *Fossils: An Introduction to Pre-Historic Life and The Creation of the Future: The Role of the American University*. He also has been a participant in the BBC television series, *The Planet Earth* and the BBC radio series, *Science, Philosophy and Religion*, has served as Chair of the National Research Council, and a director of the General Electric Corporation.

At the AAPG meeting in May, 2003, three Illini geologists will be honored. Prof. Emeritus Albert Carozzi will be recognized as a Distinguished Educator, alumnus Jack Threet, who received the geology department's alumni achievement award in 2002, will receive the Robert Dott Sr. Award, and alumnus Norb Cygan will be honored for distinguished service.

During his tenure at the University of Illinois, Carozzi was recognized by students and the geoscience profession as an outstanding and inspirational educator, researcher, and mentor. He supervised 34 Ph.D. and 16 M.S. thesis projects, and his research resulted in the publication of more

than 300 articles in scientific journals, and 19 textbooks. In recent years, Prof. Carozzi has focused his energy on writing books concerning the history of geology. He is known throughout the international petroleum industry for excellence in teaching and research on carbonate microfacies.

"The continuing professional success of his former students is a clear tribute to Dr. Carozzi's exceptional abilities and dedication to the advancement of geoscience education," says William Dawson, B.S. '74, Ph.D. '84, senior research geologist at ChevronTexaco.

Threet, who spent his entire 36-year career with Shell Oil Company, led exploration and discovery efforts in the deep water of the Gulf of Mexico, the northwest shelf of Australia, onshore Syria and offshore Malaysia, Cameroon and Brazil. He eventually became Vice President of the company. The Robert H. Dott, Sr., Memorial Award honors and rewards Threet for original articles published by the AAPG. Threet received last year's Alumni Achievement Award.

Cygan's generous service to AAPG spans 35 years. Over the last 25 of those he has been particularly dedicated to AAPG educational activities. For a number of years, he worked to develop an AAPG teachers and students program at annual AAPG conventions. The first of these took place in 1990, with the first Teachers/Students Educational and Field Trip program. This program, as well as several others Cygan has organized, has continued ever since. Cygan was honored with the AAPG Certificate of Merit in 1990 and 2001, and in 1995 was presented with the Public Service Award for his contribution as an AAPG member in Public Affairs.

Degrees Conferred in 2002

Bachelor of Science Degrees

May

Adrienne Jay Gandhi
Andrew Russell Parrish
Deanna Marie Warkins

August

James Sophocles Cokinos
Brian Robert Hacker
Scott William Lepley

Master of Science Degrees

May

David John Beedy (*Teaching of Earth Science Degree*)

Dylan Pierce Canavan (*Teaching of Earth Science Degree*)

Peter Raymond Malecki (*Teaching of Earth Science Degree*)

Michael Russell Fortwengler—*Distribution and Frequency of Black Band Disease and Partial Mortality of Diploria Strigosa on Curacao, Netherlands Antilles* (Bruce Fouke)

Dmitry Leonidovich Lakshtanov—*Experimental Investigation of High-Temperature Acousto-Elastic Properties of Natural Crystalline Silica (SiO₂)* (Jay Bass)

Xinlei Sun—*PKP Travel Times at Near Antipodal Distances: Implications for Inner-Core Anisotropy and Lowermost Mantle Structure* (Xiaodong Song)

Xiaoxia Xu—*Evidence for Inner Core Super-Rotation from Time-Dependent PKP Travel Times Observed at Beijing Seismic Network* (Xiaodong Song)

October

Amanda Beth Duchek—*Geophysical Investigation of the Cottage Grove Fault System, Southern Illinois Basin* (Wang-Ping Chen)

Doctor of Philosophy Degrees

May

Keith C. Hackley—*A Chemical and Isotopic Investigation of the Groundwater in the Mahomet Bedrock Valley Aquifer: Age, Recharge and Geochemical Evolution of the Groundwater* (Thomas F. Anderson)

October

Michael R. Brudzinski—*Seismic Studies of Subducted Lithosphere Beneath Fiji: Evidence for a Petrologic Anomaly* (Wang-Ping Chen)

Michael Joseph Harrison—*Origin, Architecture, and Thermal State of the Lackawanna Synclinorium, Pennsylvania: Implications for Tectonic Evolution of the Central Appalachians* (Stephen Marshak)

CORRECTION:

The picture on page six of the 2001 Year in Review is incorrectly labeled as Thornton Quarry. It was in fact Kentland Quarry.

Obituaries

Richard F. Mast, B.S. '57, died June 22, 2002, after a valiant struggle with cancer. Mast was born in Chicago and served in the U.S. Army. He was a pioneer in oil and gas resource assessment, working as a geologist for the Illinois Geological Survey from 1957-1973 and the U.S. Geological Survey from 1973-1995. He served the USGS as the chief of the Branch of Oil and Gas Resources and as Regional Geologist of the central Region. He coordinated the USGS 1992 National Oil and Gas Resource Assessment for which he received the Department of Interior Distinguished Service Award. He is survived by his wife, Joyce Ablinger Mast, B.S. '57, five children and four grandchildren.

Richard M. Winar, B.S. '53, M.S. '55, died September 6, 2002, of esophageal cancer. He was 71. Winar was a geologist and environmental engineer who worked most recently at the Oakland County Road Commission of Michigan. He was a member of the AIPG and a veteran of the U.S. Army. A memorial service was held September 15. Winar is survived by his wife of 49 years, Lois Winar, and his daughters, Susan Winar, Gail Winar and Nancy Winar Cracknell, as well as four grandchildren and a brother.

Dick Benson, M.S., '53, Ph.D. '55, Senior Scientist and Curator of Ostracodes at the Smithsonian NMNH, passed away in February, 2003, from an apparent heart attack. Dick had a profound impact upon our conceptualization and understanding of ostracodes and, as those of you who knew him, was an incredible character on many levels. He will be greatly missed.

1940s

Allen F. Agnew, A.B. '40, M.S. '42, writes "I am happy to see the continued excellent quality of programs and people in our department. At age 84, nostalgia has replaced my cutting-edge fervor, but I do make one geologic meeting each year (AAPG) and take vicarious pleasure in the activities of all of you who truly are at the cutting edge of your subfields! What a marvelous issue of the "Annual Review" of the Department this is! Thanks, Deb and Steve!"

1950s

Norb Cygan, B.S. '54, and his wife, Royann, met up last September with Bob Leonard (B.S. '55) his wife Joan ('56) at the Roosevelt Rendezvous in Yellowstone Park. "We enjoyed seven-mile hikes, rides, etc. to view and study to flora, fauna and geological phenomena of Yellowstone Park (just before the first snow). Lots of bear, bison, birds, wolves, and volcanics. Bob seemed to have some problems controlling his horse, Widdermaker, while I had no problem with Pokey!"

Carl Davis, B.S. '59, wrote us a note reminiscing about field camp in the summer of '58. "It was a great experience for me ... a once-in-a-lifetime event," he writes. Davis remembers getting caught in a thunderstorm while he was in a canyon and taking cover under an overhanging bank with his feet still in the stream. Lightning hit about a half-mile away, based on the time between flash and sound. He got the shock at the exact time of the stroke. "I think I got about 400 volts but only a small amount of current. So that was an interesting experience." During the same storm Davis remembers Martin Jean coming face-to-face with a brown bear. "I heard the scream a mile away."

1960s

Bruce M. Nichols, B.S. '68, is living in Mermaid Waters, Australia, where he is developing a high-grade limestone resource in N.S.W., and "loving life."

1970s

Andrew M. Gombos Jr., M.S. '73, is working in Abu Dhabi where he is a geophysicist working on the Bu Hasa field, a large rudistid reef. He can be reached at agombos@adco.co.ae

Patricia A. Santogrossi, B.S. '74, M.S. '77, has become chief geologist at Knowledge Reservoir, Houston. Prior to that she was chief geologist at Chroma Energy in Houston.

1980s

Dr. Stephen Laubach, Ph.D. '86, a senior research scientist at the University of Texas Bureau of Economic Geology, completed a national speaking tour of university geology departments and an AAPG Hedberg Research Conference as part of the AAPG Visiting Geologist program.

Karen Fryer, M.S. '82, Ph.D. '86, is chair of the Ohio Wesleyan department of Geology and Geography. She attended the GSA geology department cocktail during the GSA meeting in Denver last October with her son, Gavin, and her husband Cameron Begg. Cameron ran the microprobe lab here and is doing similar work at Ohio State University.

Dave Watson, M.S. '88, is now working as a senior geologist at Unocal and lives in the Houston area.

1990s

University of Texas Bureau of Economic Geology Research Fellow **Dr. Linda Bonnell, Ph.D. '90**, has been named as an AAPG Distinguished Lecturer for 2003-2004. The title of her presentation is "Diagenetic Effects on Fracture Development." Linda is one of the principals of Geocosm, an Austin-based reservoir consulting group.

Christine Clark McCracken, M.S. '97, successfully defended her thesis in June. She has headed to Ypsilanti, Michigan, where she is assistant professor of mineralogy and petrology at Eastern Michigan University. She ran into **Doug Tinkham, M.S. '97**, at the Geologic Association of Canada/Mineralogical Association of Canada meeting last spring in Saskatoon. Doug is a post-doc in Calgary.

Shayne Pasek, B.S. '98, married Erick Staley last September. Erick was a UC Berkeley student who spent a semester at the University of Illinois studying with Bruce Fouke. The couple first met on a field trip to Bonaire led by Fouke. Shayne and Erick are living in Portland, Oregon.

Sharon (Horstman) Qi, B.A. '89, M.S. '93, and her family are moving to Oregon, where she will continue to work for the U.S.G.S.

2000s

Judd Tudor, B.S. '97, M.S., '00, is getting married in western Scotland in July '03. He is still working for Schlumberger Wireline as a field engineer and was recently transferred to Edinburg, TX.

Anthony (Tony) Gibson, M.S. '01, has returned to Otney, Ill., and has joined his family-owned oil company, Murvin Oil, as executive vice president and petroleum geologist. Tony is the third generation of his family to work at the company. In 2002, Tony also established Gibson Supply, Inc. to provide local access to oilfield equipment and supplies.

Former Faculty News

Peter Burns, who was a visiting assistant professor in Geology at UIUC from 1996-1997, has been appointed Massman Chair of the Department of Civil Engineering and Geological Sciences at the University of Notre Dame. He was also promoted to professor in November. While at Illinois, Peter taught courses in mineralogy, geology of the planets, and oceanography.

John McBride, who was an adjunct faculty member since 1997, has moved to Utah to teach at Brigham Young University. "Leaving Champaign was not an easy decision," he writes. John has developed some new courses and purchased equipment to support a geophysics program at BYU. John can be reached at john_mcbride@byu.edu or (801) 422-5219.

HONOR ROLL OF DONORS FOR 2002



The following is a list of friends and alumni of the Department of Geology who have donated to the department during the calendar year 2002.

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

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Feng-Sheng Hu (Associate Professor)

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Jorge Frias-Lopez (Post-Doctoral Researcher)
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Andrey Kalinichev (Senior Research Scientist)
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Ann Long (Teaching Lab Specialist)
Laura Rademacher (Post-Doctoral Researcher)
Stanislav Sinogeikin (Research Scientist)
Frank Tepley (Post-Doctoral Researcher)
Raj Vanka (Resource and Policy Analyst)
John Werner (Visiting Assistant Professor)
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Jianwei Wang
Jingyun Wang
Jackie Welch
Xiang Xu
Xiaoxia Xu
Zhaohui Yang
Juanzuo Zhou

Congratulations

Craig Lundstrom and his wife, Lara, are the proud parents of Nathaniel Powell Lundstrom, who was born December 18th at Carle Hospital. He weighed 8 lbs., 3 oz. at birth. Nathaniel also has a big brother, Evan, who is four.

Barb Elmore, administrative secretary, announces the arrival of her fifth grandchild. Tyler Christopher Junkins was born on November 4. Tyler's parents (Barb's son and daughter-in-law) live in Ashkum, Ill.

COURSES TAUGHT IN 2002

Geol 100 – Planet Earth
Geol 101 – Introduction to Physical Geology
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 311 – Structural Geology and Tectonics
Geol 315 – Field Geology
Geol 317 – Geologic Field Methods, Western United States (Field Camp)
Geol 320 – Introduction to Paleontology
Geol 332 – Mineralogy and Mineral Optics
Geol 336 – Petrology and Petrography
Geol 340 – Sedimentology and Stratigraphy
Geol 350 – Introduction to Geophysics
Geol 351 – Geophysical Methods for Geology, Engineering, and Environmental Sciences
Geol 352 – Physics of the Earth
Geol 355 – Introduction to Groundwater
Geol 360 – Geochemistry
Geol 381 – Modeling Earth and Environmental Systems
Geol 415 – Advanced Field Geology
Geol 433 – Isotope Geology
Geol 440 – Petroleum Geology
Geol 452 – Geodynamics
Geol 454 – Physics of the Earth's Interior
Geol 489 – Geotectonics
Geol 491 – Current Research in Geoscience
Geol 493K6 – Chemistry & Petrology of the Mantle
Geol 493Q3 – Practical Petrology

RESEARCH GRANTS ACTIVE IN 2002



American Chemical Society Petroleum Research

Development of Selenium Isotope Ratios as Indicators of Sedimentary Paleo-Environments.

Principal Investigator: Thomas Johnson

Department of Energy

Field-Constrained Quantitative Model of the Origin of Microbial

Principal Investigator: Craig M. Bethke

Computational & Spectroscopic Investigations of Water-Carbon Dioxide Fluids & Surface Sorption Processes.

Principal Investigator: R. James Kirkpatrick

Federal Highway Administration

Predicting Aggregate Reaction Based on Chemistry and Nanostructure of Alkali-Silica Gels.

Principal Investigators: Leslie J. Struble and R. James Kirkpatrick

Illinois Council On Food And Agriculture Research

Estimation of Denitrification Rates in the Shallow Groundwater Flow Systems of Big Ditch Watershed, Illinois – Isotope Assessment.

Principal Investigator: Thomas Johnson

Institute Of Geophysics And Planetary Physics, Los Alamos:

Timescales of Crustal Level Differentiation: U-Series Measurements and Geophysical Monitoring at Arenal Volcano, Costa Rica.

Principal Investigator: Craig Lundstrom

NASA

Core Angular Momentum and the International Earth Rotation Service Coordination Center / Sub-Centers Activity for Monitoring Global Geophysical Fluids.

Principal Investigator: Xiaodong Song

NSF

Polymorphism and Structural Transitions During Glass Formation.

Principal Investigator: Jay Bass

Development of Laser Heating for Sound Velocity Measurements at High P & T.

Principal Investigator: Jay Bass

Sound Velocities & Elastic Moduli of Minerals Mantle Pressures and Temperatures with Laser Heating.

Principal Investigator: Jay Bass

Workshop on Phase Transitions and Mantle Discontinuities.

Principal Investigator: Jay Bass

CSEDI: Collaborative Research: Composition and Seismic Structure of the Mantle Transition Zone.

Principal Investigator: Jay Bass

Consortium for Material Property Research in the Earth Sciences.

Principal Investigator: Jay Bass

Collaborative Research: Elasticity Grand Challenge of the COMPRES Initiative.

Principal Investigator: Jay Bass

Global Climate Change & The Evolutionary Ecology of Antarctic Mollusks in the Late Eocene.

Principal Investigator: Daniel B. Blake

A Seismic Study of the Mantle Transition Zone and Subducted Lithosphere.

Principal Investigator: Wang-Ping Chen

Seismic Reflection Profiles in Southern Illinois (funded through the Mid-America Earthquake Research Center).

Principal Investigators: John McBride, Stephen Marshak, and Wang-Ping Chen

A Seismic Study of the Taiwan Orogen.

Principal Investigator: Wang-Ping Chen

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

Principal Investigator: Wang-Ping Chen

Proximal Carbonate Ejecta from Cretaceous-Tertiary Chicxulub Impact Crater: $^{87}\text{Sr}/^{86}\text{Sr}$ Chronology, Ballistic Sedimentation, & Diagenetic Alteration.

Principal Investigator: Bruce W. Fouke

Geobiology & The Emergence of Terraced Architecture During Carbonate Mineralization.

Principal Investigator: Bruce Fouke

Development of Cr Stable Isotopes for Cr Transport Studies and Other Geoscience Applications.

Principal Investigator: Thomas Johnson

Collaborative Research: Field Investigation of Se Oxyanion Reduction & Se Sources in Wetlands: Application of Se Isotopes.

Principal Investigator: Thomas Johnson

Measuring Trace Element Partition Coefficients between Minerals and Basaltic Melt.

Principal Investigator: Craig G. Lundstrom

Observational Constraints on Melt-Rock Reactions During Melting of the Upper Mantle.

Principal Investigator: Craig C. Lundstrom

Windows into MORB Petrogenesis: Measuring U-Series Disequilibria in MORB from Transforms.

Principal Investigator: Craig Lundstrom

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

Principal Investigators: Frank J. Tepley III and Craig C. Lundstrom

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

Principal Investigators: Stephen Marshak and Alan Whittington

Tectonics of the Araçuaí/Ribeira Orogenic Tongue of Southeastern Brazil and its Significance to the Assembly of West Gondwana.

Principal Investigator: Stephen Marshak

Structure and Dynamics of Earth's Core and Lowermost Mantle.

Principal Investigator: Xiaodong Song

Constraining the Structure and Rotation of the Inner Core.

Principal Investigator: Xiaodong Song

ONR

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

Principal Investigator: Bruce Fouke

State Of Illinois Board Of Higher Education
Evolution of the Martian Surface—A

Cooperative Learning Module for General Education in Science.

Principal Investigator: Albert Hsui

University Of Illinois Research Board

Seed Money for Research Initiative in Aquifer Microbiology.

Principal Investigator: Craig M. Bethke

Airbrasive Unit for Paleontological Research.

Principal Investigator: Daniel B. Blake

Structure of Crust and Mantle beneath China from the New Chinese Broadband Digital Seismic Network.

Principal Investigator: Xiaodong Song

LIST OF PUBLICATIONS FOR 2002

- Ellis, A. S., Johnson, T. M., and Bullen, T. D., 2002, Cr isotopes and the fate of hexavalent Cr in the environment: *Science*: 265, 2060-2062.
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- Bethke, C.M., and Johnson, T.M., 2002, Paradox of groundwater age: *Geology*, 30: 385-388.
- Hou, X., and Kirkpatrick, R.J., 2002, Structure and Dynamics of ClO₄⁻ in Layered Double Hydroxides: *Chemistry of Materials*, 14: 1195-1200.
- Wilkerson, M.S., Fischer, M.P., and Apotria, T.G. (editors), 2002, Fault-related folds: Transition from two dimensions to three dimensions, special issue of the *Journal of Structural Geology*: 24(4).
- Song, X.D., 2002, The Earth's Core, *International Handbook of Earthquake and Engineering Seismology* (Lee, W.H.K., Kanamori, H., Jennings, P.C., and Kisslinger, C., eds.), Volume 1, Chapter 56, Academic Press, San Diego.
- Blake, D.B., 2002, Evaluation of the Mississippian asteroid (Echinodermata) *Compsaster formosus* Worthen and Miller: A Paleozoic homeomorph of the post-Paleozoic *Asteriidae*: *Paleontologische Zeitschrift*, 76:357-367.
- Park, J., Bethke, C.M., Torgersen, T., and Johnson, T.M., 2002, Transport modeling applied to the interpretation of groundwater ³⁶Cl age: *Water Resources Research*: 38, 1-15.
- Wilkerson, M.S., Apotria, T.G., and Farid, T.A., 2002, Interpreting the geologic map expression of contractional fault-related fold terminations: Lateral/oblique ramps versus displacement gradients: Wilkerson, M.S., Fischer, M.P., and Apotria, T.G. (ed.), *Fault-related folds: Transition from two dimensions to three dimensions*, special issue of the *Journal of Structural Geology*: 24(4), 593-607.
- Kalinichev, A.G. and Kirkpatrick, R.J., 2002, Molecular dynamics modeling of chloride binding to the surfaces of Ca hydroxide, hydrated Ca-aluminate and Ca-silicate phases: *Chemistry of Materials*, 14: 3539 - 3549.
- Song, X.D., and Xu, X. X., 2002, Inner core transition zone and anomalous PKP(DF) waveforms from polar paths: *Geophys. Res. Lett.*, 29(4): 10.1029/2001GL013822.
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- Jin, Q., and Bethke, C.M., 2002, Kinetics of electron transfer through the respiratory chain: *Biophysical Journal*: 83, 1797-1808.
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Geothrust Members for 2002

- J. William Soderman—Chair, M.S. '60, Ph.D. '62
- James R. Baroffio, Ph.D. '64
- David K. Beach, B.S. '73
- Marion "Pat" Bickford, M.S. '58, Ph.D. '60
- Lester W. Clutter, B.S. '48, M.S. '51
- Norbert E. Cygan, B.S. '54, M.S. '56, Ph.D. '62
- Edwin H. Franklin, B.S. '56
- John R. Garino, B.S. '57
- James W. Granath, B.S. '71, M.S. '73
- Morris (Brud) W. Leighton, B.S. '47
- Patricia Santogrossi, B.S. '74, M.S. '77
- Jack C. Threet, A.B. '51

COLLOQUIUM SPEAKERS FOR SPRING AND FALL 2002



Spring 2002

- Jan. 25 Miguel Goni, University of South Carolina**
Compound Specific Stable Carbon Isotopic Analysis to Trace Organic Matter in Ocean Margin Sediments
- Feb. 1 Edwin Schauble, California Institute of Technology**
Predicting the Stable-Isotope Geochemistry of Heavy Elements
- Feb. 8 Todd Ehlers, California Institute of Technology**
Climate, Tectonics, and Topographic Evolution of the Washington Cascade Mountains
- Feb. 12 Timothy Ku, University of Michigan**
New Insights into Tropical Shelf Carbonate Preservation and Authigenic Clay Formation: Evidence from Sediment and Pore Water Geochemistry
- Feb. 15 Jonathan Stock, University of California, Berkeley**
Valley Incision by Debris Flows: Evidence for a Widespread Topographic Signature and the Form of a New Erosion Law
- Feb. 19 Timothy Rozan, Simon Fraser University**
Trace Metal Speciation in Freshwaters: Organic Versus Inorganic Complexation. Part I. Multidentate Metal-Organic Complexation Part II. The Role of Reduced Sulfur
- Feb. 22 Andrew Jacobson, University of Michigan**
Silicate Versus Carbonate Weathering in Uplifting Orogenic Belts
- Feb. 25 Gerd Steinle-Neumann, Carnegie Institution of Washington**
Earth's Deepest Secrets—Iron in the Inner Core
- Feb. 28 Jie Li, Carnegie Institution of Washington**
Experimental Constraints on the Earth's Core
- Mar. 4 Sang-Heon Shim, University of California at Berkeley**
Phase Diagram and Equation of State of $MgSiO_3$ Perovskite in Earth's Mantle
- Mar. 11 Guoyin Shen, University of Chicago**
Experimental Approaches Towards an Understanding of Earth's Mantle and Core Materials
- Mar. 26 Susan Kieffer**
Geologic Nozzles: Old Faithful Geysir, Mount St. Helens, the Rapids of the Colorado River... and Other Shocking Phenomena!
- Apr. 5 Holger Hellwig, Carnegie Institution of Washington**
Nonlinear Optical Studies of the Relationship Between Structure and Properties
- Apr. 8 Jonathan Tomkin, Yale University**
Quantitative Testing of Bedrock Incision Models, Clearwater River, WA
- Apr. 10 Elizabeth Hearn, Massachusetts Institute of Technology**
Space Geodetic Studies of Active Crustal Deformation: Moving from "How" to "Why"
- Apr. 12 Hong Wang, IGS**
Millennial and Centennial Scale Climate Changes in the Middle Mississippi Valley During the Last Glaciation
- Apr. 15 Gwen Daley, University of Wisconsin, Madison**
Why Paleoenvironment Matters: Evolutionary and Paleocological Examples from the Ordovician and Pleistocene
- Apr. 18 Charly Bank, University of British Columbia**
Teleseismic Investigation of the Moho Beneath Canada and the Upper Mantle Beneath the Archean Slave Craton in NW Canada
- Apr. 19 Wang-Ping Chen, UIUC Department of Geology**
Project Hi-CLIMB: An Integrated Study of the Himalayan-Tibetan Continental Lithosphere during Mountain Building
- Apr. 22 Julie Maxson, Gustavus Adolphus College**
Reconstructing Rivers: Answering Big Questions About Life, Death, Tectonics, and Climate
- May 2 John Werner, University of Illinois at Urbana-Champaign**
Creeping into the Icehouse: Morphological Change in Gastropods of the Eocene La Meseta Formation (Seymour Island, Antarctic Peninsula) in Response to the Onset of Cenozoic Cooling
- May 6 John Dawson, University of Iowa**
The Morphology and Evolution of the Azooxanthellate Coral Genera *Anomocora* and *Asterosmilia*

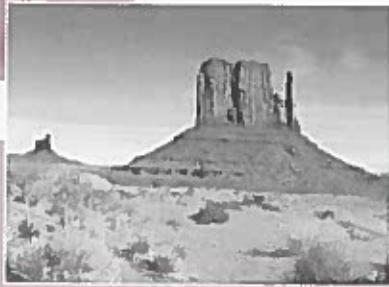
Fall 2002

- Sept. 6 Tom Johnson, UIUC Department of Geology**
Chromium Isotopes and the Fate of Hexavalent Chromium in the Environment
- Sept. 13 Andrey Kalinichev, UIUC Department of Geology**
Molecular Modeling of Geochemical Fluids and Fluid/Mineral Interfaces
- Sept. 20 Ken Lepper, Los Alamos**
Luminescence Dating: A Light From the Past Brightens the Future of Quaternary Geochronology
- Sept. 27 Meenakshi Wadhwa, Field Museum of Natural History and University of Chicago**
Time Scales of Planetesimal Accretion and Differentiation Based on the Mn-Cr Chronometer
- Oct. 4 Aldo Shemesh, Weizmann Institute, Israel**
Holocene Climate Change Inferred From Oxygen Isotope Records of Lacustrine Biogenic Silica
- Oct. 11 Charlie Werth, UIUC Environmental Engineering**
Analysis of Nonaqueous Phase Liquid Volatilization in Heterogeneous Porous Media
- Oct. 18 Louise Kellogg, University of California, Davis**
Journey to the Center of the Earth: Structure and Dynamics of the Deep Mantle
- Nov. 8 Renata Wentzcovitch, University of Minnesota**
First Principles Thermoelasticity of Mantle Materials
- Nov. 15 James Conder, Washington University, St. Louis**
Cross-Axis Mantle Flow and Asymmetric Melt Production at the East Pacific Rise
- Dec. 4 Libby Stern, University of Texas, Austin**
Geochemical and Ecological Evidence of Massive Central Texas Holocene Soil Erosion
- Dec. 13 Georges Poupinet, LGIT-CNRS, Grenoble, France**
Seismic Tomography Beneath Stable Tectonic Regions and the Dual Origin of the Continental Lithosphere

Recent Activity in Petroleum Geology at Illinois

Back in 1998, Hannes Leetaru, Ph.D. '97, a geologist at the IGS and an adjunct faculty member in the Department, joined with Prof. Steve Marshak to establish a new course in petroleum geology. Five years later, the course is still going strong and is continuing to grow in enrollment. Because of Marshak's other teaching responsibilities, Leetaru now runs the entire course, bringing to bear his many years of experience working in the industry. Not only do students learn how to interpret seismic-reflection profiles and well logs, but the course includes exercises that involve Landmark™ computer software, one of the principal programs used by the petroleum industry for modelling geologic features in three dimensions.

This past fall, students interested in petroleum geology had the added benefit of being able to attend the eastern section meeting of the AAPG, which was hosted by the IGS and took place in Champaign-Urbana. At the meeting, students attended talks, met with recruiters and industry representatives, and saw exhibits of software and geophysical companies. Prof. Bruce Fouke and his group presented research at the meeting. Fouke also hosted an open house for meeting participants to visit the new geomicrobiology lab in the Department.



Join us in Utah!

Come join Geology Department friends and colleagues at a special reception Monday, May 12, at the AAPG meeting (in Salt Lake City). The reception will honor three Illini — Albert Carozzi, Jack Threeth and Norb Cygan — who have received major AAPG awards. Details will follow soon!



Professor Craig Lundstrom organized a raft trip down the Colorado River, in the Grand Canyon. Here Professors Craig Bethke and Tom Johnson (second and third from left) enjoy a quieter moment on the river.



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