

INDIANA UNIVERSITY
ALUMNI ASSOCIATION

Virgil T. DeVault Alumni Center
1000 East 17th Street
Bloomington, Indiana 47408-1521

Nonprofit Organization
Postage
PAID
Indiana University
Alumni Association

This publication is paid for in part by dues-paying members of the Indiana University Alumni Association

Indiana University College of Arts & Sciences Alumni Association

HOOSIER GEOLOGIC RECORD

Alumni Newsmagazine of the Department of Geological Sciences



Summer 2011

HOOSIER GEOLOGIC RECORD

Alumni Newsmagazine of the Department of Geological Sciences
Summer 2011

Table of Contents

Chair's Welcome.....	1
Department Welcomes Laura Wasylenki	2
Chair Stratigraphy.....	2
David Bish Uses Sabbatical to Study Clay Minerals in Arizona.....	3
IU's Paleontology Collections.....	3
Juergen Schieber Beta-Testing New Ion Mill Design.....	4
Department, IGS Collaboration Recognized with 'Green' Trophy	5
Department of Geological Sciences Faculty and Staff	5
Making the Move	5
Awards and Ceremonies.....	6-7
Geologic Field Station Update	8
<i>Hoosier Geologic Record</i> Nostalgia.....	9-10
Indiana Geological Survey Update	11
Faculty News	12-15
Editorial Corner	15
Emeriti Faculty News.....	16-18
Faculty Research Grants.....	18
Student News	19-21
Alumni Class Notes	20-25
Tenaya Hurst's One-Woman Shows Drum Up Interest in Geology	24
Advisory Board Activities	25
In Memoriam	26
Geosciences Library	27
Donors	28-30
Class Notes Form	31
On the Front Steps	32



We urge alumni and friends to send us prints, photos, or slides that would interest our readers. Please be sure to provide a complete caption and label the material with your name and address so that it can be returned. We can't promise to include all submissions, but we can promise to return them.

HOOSIER GEOLOGIC RECORD

This magazine is published by the Indiana University Alumni Association, in cooperation with the Department of Geological Sciences and the College of Arts and Sciences Alumni Association, to encourage alumni interest in and support for Indiana University. For activities and membership information, call (800) 824-3044 or send e-mail to iualumni@indiana.edu.

Department of Geological Sciences

Chair
Simon C. Brassell
Director of Development
Lee J. Suttner
Editor
Joanna Wall

Indiana Geological Survey

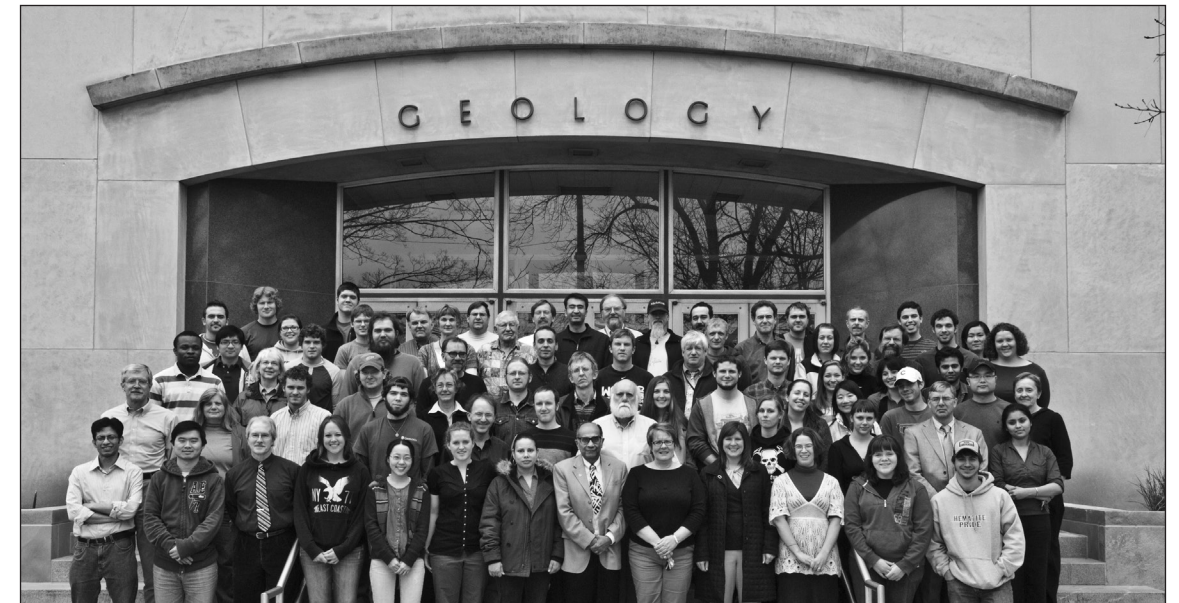
Photography
Barbara Hill and John Day

College of Arts and Sciences

Interim Dean
David Zaret
Senior Director of Development and Alumni Programs
David Ellies

IU Alumni Association

Executive Director
J Thomas Forbes
Senior Director, Constituent and Affiliate Groups
Nicki Bland
Editor for Constituent Periodicals
Sarah Preuschl Anderson



Department of Geological Sciences Spring 2009

Left to right, from bottom

Row 1: Shibaji Chatterjee, unidentified, Ed Ripley, Abbie Ennecking, Hsiu-Wen Wang, Emily Gercke, Christina Comerford, Abhijit Basu, Donna Hackney, Jennifer Latimer, Martha Growdon, Crystal Hout, TreVor Howald
Row 2: David Bish, Terry Stigall, Peter Riggs, Michael Smith, Peter Sauer, Patrick Ducey, Craig Moore, Robin Green, Bissett Young, Simon Brassell, Ritu Bose
Row 3: Chinaemerem Kanu, Ruth Droppo, Matt Reeder, Lisa Pratt, Seth Young, Arndt Schimmelmann, Will Simons, Katie Nold, Ling Gao, unidentified, Hongji Yuan, Lou Malcomb
Row 4: Ray Chuang, Alex Gore, Andrew Gustin, David Polly, Andy Ruff, Curtis Williams, Jim Brophy, Michael Cheshire, Laura Podratz, unidentified, unidentified, Lindsay Bugher
Row 5: unidentified, unidentified, unidentified, Ken DeHart, Claudia Johnson, Erle Kauffman, Zalmai Yawar, Jeff Frey, Vitaliy Zadoya, Michael Hamburger, Joanna Wall, unidentified, Gary Pavlis, Ken O'Donnell, Ting Ting
Row 6: Brooks Proctor, unidentified, Mark Bauer, Bruce Douglas, Bob Wintsch, Jeff Frey, Kevin Robertson, Rob Waddle, John Bogeman, unidentified



Department of Geological Sciences Fall 2010

Left to right, from bottom

Row 1: Dalton Hardisty, Sarah Cadieux, Cindy Elbaz, Mackenzi Kirchner-Smith, Robin Green, Alison Bormet, Kim Shoemaker, Laura Wasylenki, Katie Nold, Hsiu-Wen Wang, Justin Zabrecky, Ray Chuang, Qian Zhang
Row 2: Ben Underwood, Seth Young, Lisa Pratt, Blaire Hensley-Marschand, Emily Gercke, Michelle Lawing, Polly Root, Luke Martin, Sasha Wilson, Michael Cheshire, Kevin Robertson, Hongji Yuan, Brandon Dubich, Yanyan Chen
Row 3: Matt Reeder, Humberto Carvajal-Ortiz, David Polly, Chusi Li, Yifei Liu, Erika Eslwick, Peter Sauer, Ling Gau, Rebecca Stokes, Xin Liu, Gary Pavlis
Row 4: Cristian Medina, Adam Johnson, David Bish, Enrique Merino, Jeff Frey, Ruth Droppo, Agnieszka Fuhrman, Alexander Panessa, Rich Bykowski, David Riese
Row 5: Mark Bauer, Will Simmons, Andy Ruff, Poonam Giri, Erle Kauffman, Abhijit Basu, Ken DeHart, Lindsay Bugher, Lou Malcomb, Don Hattin, Simon Brassell

Department welcomes changes to space utilization

I'm delighted to introduce this long-awaited issue of the *Hoosier Geological Record*, which provides news of the Department of Geological Sciences and its alumni and celebrates the recent accomplishments of our students and faculty.

I am saddened to begin this letter with news of the passing of two of our professors emeriti, Noel Krothe and Judson Mead. Both of these members of our faculty leave profound departmental legacies that are exemplified by their dedication to their students in hydrogeology and geophysics, respectively. Noel advised scores of graduate students, expertly training them to solve hydrogeologic problems and providing fatherly like support and encouragement. Similarly, Judson Mead was an inspirational mentor for generations of undergraduate students who benefited from his skills in teaching geology in the field. He is also rightly remembered for his insightful leadership of the Geologic Field Station, which is named in his honor, and his pivotal role in elevating our program in Montana to one of foremost national stature.

We are pleased that Laura Wasylenki has joined our faculty ranks as an assistant professor in metal isotope geochemistry. Starting in August 2010, her first phone call was from a program manager at the National Science Foundation conveying the news that her major instrument proposal would be funded at \$650,000 — an auspicious start to her career at Indiana University. This award, coupled with procurement of NSF/IU funding for two new isotope mass spectrometers by Ed Ripley and Lisa Pratt, further reinforces our standing as a center of excellence for isotope geochemistry. In addition to these successes, almost half the faculty received new research grants from NSF, NASA, or DOE during 2010, accomplishments complemented by numerous publications, often co-authored with students. At our annual student awards ceremony last April a record number of graduate students were lauded for authorship of peer-reviewed papers, in addition to those recognized for outstanding teaching, for obtaining competitive grants, or other research achievements.

Profound changes have recently occurred in space utilization by the Department of Geological Sciences. Last winter several research laboratories, primarily for biogeochemistry and analytical and aqueous geochemistry, moved to the fourth floor of the new Multidisciplinary Science Building II, and the Stable Isotope Research Facility

transferred to purpose-built space on the ground floor of MSB-II. These migrations enabled other domino-like changes in occupancy of research laboratories, affording more space for new sediment flumes, the mineralogy collection, and petrology. The laboratory classrooms on the Geology Building's second floor used for our introductory geology courses were also completely renovated this past summer. They now provide versatile, well-equipped rooms that we hope will provide an attrac-



Simon Brassell

tive environment that encourages more undergraduates to pursue geology as their major. The next phase of proposed renovations will permit further long-awaited space remodeling within the department to update classrooms used in teaching courses for majors and graduate students. The need for such refurbishment is strengthened by the growth in our enrollments, which are markedly higher enrollments in mineralogy, in our 400-level courses, and also in G429 taught at the Field Station.

In October 2008 the department launched a three-year, \$3 million endowment campaign for the IU Judson Mead Geologic Field Station as an integral part of a long-term strategic plan to enhance our field programs and supporting infrastructure. Gifts and pledges for the IU Geologic Field Station met the \$1.5 million target for Phase I of the campaign this past summer. We sincerely thank all contributors for their support of our Field Station program and are truly indebted to the leadership of Robert Shrock Professor Emeritus Lee Suttner, aided by staunch

support from several Houston and Denver alumni. I'm delighted that two additional major gifts have provided the critical leverage that persuaded David Zaret, the interim dean of the College of Arts and Sciences, to approve a match of \$200,000 from the College toward construction of a new classroom/computer complex at the Field Station. This facility will support future crucial initiatives in course offerings, enable new course innovations, and accommodate integrated use of computational technology. These developments bode well for the long-term renaissance of IU field programs for learning geology.

Our ability to recruit faculty, occupy new laboratories in MSB-II, and renovate classrooms in the Geology Building contrasts with the effects of the recession that has led to significant reductions in state funding for IU. These funding reductions prompted various cost-cutting measures, resulting in a 2 percent decrease in the department's budget. Fortunately, our endowment funds help mitigate the effects of these cuts on our students, especially their impact on our students. Last year we expended more than \$250,000 to support a wide range of student activities, including fellowships and scholarships, travel to professional meetings, grants for research, including fieldwork and analyses, and field trips associated with several courses.

I thank all alumni and friends for your valued support that provides our students with the many opportunities that enhance their learning and research and enrich their experiences in geology at Indiana University. I believe that the Department of Geological Sciences is well positioned for further advancement, and I extend my best wishes to Lisa Pratt, who will assume the role of chair in July. Finally, I want to express my appreciation of the efforts of all the faculty and staff, especially Joanna Wall, who contributed to the production of this edition of the *Hoosier Geologic Record*.

— Simon Brassell



Around the Department

We have chosen to make this issue of the *Hoosier Geologic Record* more pictorial than previous issues. We have also chosen to highlight information on three endeavors that we include in this section. All faculty reports in the section on faculty news are short but for one on **Laura Wasylenki**, whom we welcome as our newest professor (see below). Many of you will remember Professor **Carl Beck**, who, 50 years ago, pioneered the study of biominerals through X-ray crystallography. Today, **David Bish** is pioneering research into the ultimate in X-ray mineralogy. Many of you will remember the glorious days of sandstone geology captained by **Paul Potter** and **Lee Suttner**. Today, **Juergen Schieber** is opening a new vista in shale research with flume experiments and

nanoSEM. Finally, we now see a heroic effort by **Erika Elswick**, **Claudia Johnson**, and **David Polly** to organize, in a modern way, our world-famous paleontological collection, a part of which **Alan Horowitz** had catalogued in the very early days of computerization.

The dedication with which our staff members work in silence and behind the scene is what keeps us going. Many of you will recall how **Sarah Burton**, **Mary Beth Fox**, and **Jeanette Hargrave** steered us through many years and through major transitions. The same dedication and allegiance to the institution have **Terry Stigall** approaching her 30 years of service; **Mary Iverson** is continuing after 45 years, and **Ken DeHart** is continuing after 30 years, for which they were honored in 2010.

Department welcomes Laura Wasylenki

Laura Wasylenki became assistant professor of geological sciences at Indiana University Bloomington on Aug. 1, 2010. She was previously assistant research scientist in the School of Earth and Space Exploration at Arizona State University. She received a BS from Stanford University in 1992 in geology and symbolic systems (artificial intelligence) and completed her MS and PhD in geological and planetary sciences at the California Institute of Technology in 1995 and 1999. She was on the faculty of Hartwick College from 1999 to 2002 and was a postdoctoral fellow at Virginia Tech from 2002 to 2004.



Laura Wasylenki

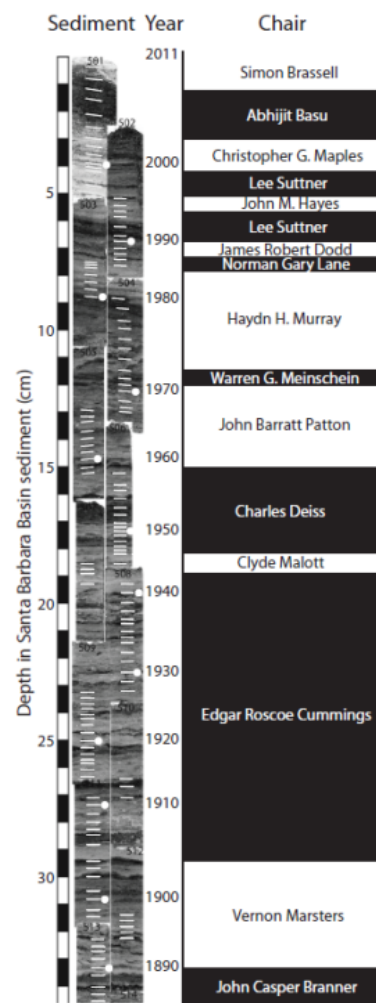
Formerly an igneous petrologist and then a specialist in calcite crystal growth and biomineralization, Wasylenki now focuses on the use of metal stable isotope geochemistry to address geological, environmental, and biological questions. Many of her recent and current projects have investigated metal isotope effects at solid-fluid interfaces, in particular during metal adsorption to oxyhydroxide mineral particles. This work has implications for metal chemistry of the ancient and modern oceans and for environmental metal transport.

Wasylenki is a biogeochemist working on the chemistry of metals in the earth's lithosphere, hydrosphere, and biosphere. Nearly all of her work involves analysis of the ratios of stable isotopes of transition and post-transition metals. Her particular focus is on fundamental investigations of metal isotope fractionation mechanisms. In the past 10 years multi-collector ICP mass

spectrometry has led to the discovery that stable isotopes of most metals fractionate in a wide range of environments all over the Earth. The number of published metal isotope analyses is burgeoning rapidly, and the prospect of much new understanding of metal chemistry in nature is very exciting. Few investigators, however, have yet attempted to elucidate the mechanisms that actually drive metal isotope fractionation. Without careful investigation of molecular-scale mechanisms and systematics of metal isotope effects, we cannot hope to interpret robustly the wealth of information available in nature.

Metal isotopes' variations in nature, if properly understood, may lead to discoveries regarding how the metal chemistry of the modern and ancient oceans changed over time and how marine organisms coped with varying availability of nutrient metals over geologic time. In metal-contaminated aquifers and rivers, isotope fractionation during key processes that affect the mobility of contaminants may lead to better ways to track migration of toxic metals and to monitor remediative efforts.

Chair stratigraphy



Chairs come and go but the Department of Geological Sciences goes on forever. Above is a succession of chairs correlated with the chronology of sedimentation in the Santa Barbara Basin, which is a topic of research by Arndt Schimmelmann.

David Bish uses sabbatical to study clay minerals in Arizona

Professor **David Bish** spent the spring semester on sabbatical leave in the Department of Geosciences at the University of Arizona in Tucson, Ariz. There he had the opportunity to explore the beautiful Sonoran desert in winter, while friends in Bloomington shoveled snow. He worked at the University of Arizona with Professor Robert Downs and Hexiong Yang on a variety of mineralogical projects. Downs's lab is well equipped to perform X-ray diffraction and spectroscopic measurements at high pressures, and Bish conducted experiments on several different zeolites, phyllosilicates, and clay minerals at 1 atm. and at elevated pressures to learn more about their behavior as they are subducted. Although clay minerals generally cannot be studied using single-crystal X-ray diffraction techniques (because their crystals are very small and disordered), they can be examined in diamond anvil cells using spectroscopic methods. Samples are mounted in the diamond anvil cell, along with ruby chips that are used for measuring pressure. The sample and ruby chips are surrounded by a metal gasket and are held between two diamonds, with a fluid (generally a mixture of methanol and ethanol) surrounding the sample to generate hydrostatic stresses. Water cannot be used as the surrounding fluid because it freezes at high pressures. Fig. 1 illustrates a schematic of a diamond anvil cell, showing the path of the X-ray beam (in the case of

an X-ray diffraction experiment) through the diamonds and sample.

Using cells of this type, Bish, Downs, and Yang examined the clay mineral dickite, a polymorph of kaolinite, up to ~4 GPa (40kbar) using X-ray diffraction methods. Dickite occurs in single crystals sufficiently large to allow application of single-crystal methods, and the researchers saw evidence of a reversible phase transition about 2.6 GPa (26 kbar). The high-pressure Raman spectroscopic experiments were, unfortunately, complicated by overlap of the diagnostic bands of the mineral with those from the methanol:ethanol pressure medium, but they were able to measure high-pressure Raman spectra

of the common mineral kaolinite up to ~12 GPa (120 kbar). This pressure is approximately equivalent to 370 km depth, into the shallow mantle. Results for kaolinite were similar to those obtained for dickite, although kaolinite exhibited several phase transitions with increasing pressure. Interestingly, the phase transitions in both of the phyllosilicates primarily involve hydrogen atoms, changing the nature of the interlayer hydrogen bonding, with no other significant structural changes. As the transitions involve only H atoms, they are rapid and reversible.

In addition to studies of the high-pressure behavior of hydrous minerals, Bish also participated in a collaboration concentrating on the evolution of clay minerals since Earth's formation. This effort included consideration of the available raw materials (particularly water), the presence or absence of continents, the presence or absence of oxygen and life, and formation mechanisms as a function of time. This work culminated in a publication for *American Mineralogist* and also an invited presentation at a Pardee Keynote Symposium at the recent Geological Society of America Annual Meeting in Denver.

At the end of Bish's stay in Arizona, his host organized a trip to the famous San Carlos Indian Reservation, where he was able to collect samples of mantle xenoliths in basalt, consisting of several generations of olivine and pyroxene minerals.

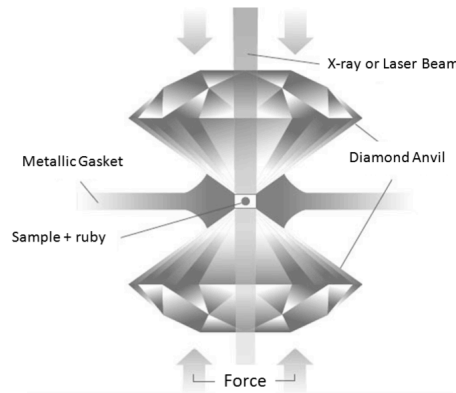
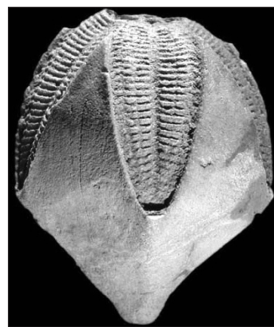


Fig. 1: Schematic of diamond anvil cell.

IU's Paleontology Collections

Work is under way to revitalize the IU Paleontology Collections. With more than a quarter-million specimen lots, more than 1,000 taxonomic type specimens, and being the subject of more than 300 scientific papers, the collection is an invaluable resource for research and teaching about Earth's past life and environments. A three-year NSF biological infrastructure grant has enabled us to pick up where **Alan Horowitz** left off. Under the direction of graduate student **Robin Green**, supervised by **Erika Elswick**, **Claudia Johnson**, and **David Polly**, a team of paid undergraduate workers has been organizing the fossils into stratigraphic order in a staging area in the basement of the Geology Building. Horowitz's old electronic specimen database has been retrieved from his still-extant computer and forms the core of a new collection management system. Plans have been made to renovate a large section of the fifth floor to properly house the newly organized collection. So far, only about one-third of the estimated cost of the renovation project has been found.



At left: A specimen of the blastoid *Pentremites* from the Mississippian of Indiana — the favorite of Alan Horowitz.

Below: A few of the IU Paleontology Collections quarter-million specimens laid out in lots for inspection.



Juergen Schieber beta-testing new ion mill design

Juergen Schieber spent part of his 2009 sabbatical in Houston at Exxon Labs researching shales with Remus Lazar and Kevin Bohacs. That work directly rejuvenated his last-century collaboration with Texaco, on the pore structure of shales. The ion-milling lab was reactivated to produce high-quality polishes, and the results were presented at an “Unconventional Gas” conference in Pittsburgh in February 2010 and at the April 2010 American Association of Petroleum Geologists meeting in New Orleans by graduate students **Ryan Wilson** and **Zalmai Yawar**. Because of established

expertise in ion-milling shales, Schieber is currently beta-testing a new ion mill design for GATAN Inc., a leading manufacturer of ion mills for material sciences and the semiconductor industry.

Schieber led a four-day field trip for the April 2010 AAPG meeting, where Devonian black shales were examined all the way from Tennessee to Indiana. The 200-page guidebook is published by AAPG, and the trip brought a busload of oil company geologists to Bloomington the see mudstone deposition in action in the basement flume lab.

In the fall of 2009, Schieber’s SEM lab

moved from our beloved Geology Building to its new and improved space in MSB-II. Testing the instrument before and after the move showed that the move was highly beneficial. Because the new lab has an isolated slab, vibrations have been greatly reduced, and electrical noise has been reduced by shielding. The “before” and “after” images speak for themselves (see Fig. 1 and Fig. 2).

Previously, we could barely resolve features in the 30–50 nm range. Now we can resolve features as small as 5 nm, and the contrast is much better. The imaged material is tin balls on carbon.

This improvement in resolution is of great importance for petrographic work on shales, where things get interesting when we can see clearly the contact relationships between mineral grains that measure only a few microns across. The SEM lab benefits the research of a wide range of students and faculty in the department and across campus.

The ability to ion-mill shales and to image nanoscale features, such as pores, is also critical for the study of gas-producing shales, the focus of recent exploration efforts by the hydrocarbon industry. The technical capabilities of the IU Shale Research Lab (flume lab, ion milling, SEM lab, etc.) have enabled Schieber to initiate the formation of an industry consortium for shale research that will include ExxonMobil, Anadarko, Shell, and Chevron (further expansion is anticipated).

At the invitation of the Houston Geological Society, Schieber presented the 2009 Robert Sheriff Distinguished Lecture in November 2009. He also received the Energy Minerals Division’s President’s Certificate for Excellence in Presentation at the 2009 AAPG Annual Meeting.

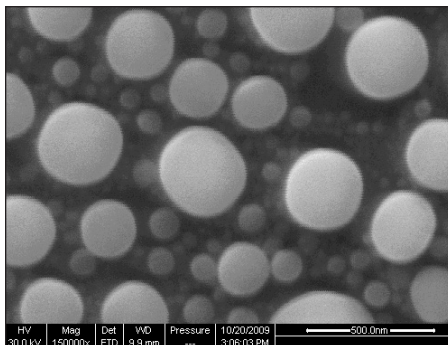


Fig. 1: Best possible resolution before move.

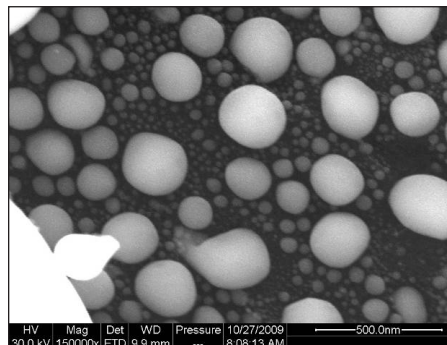


Fig. 2: Best possible resolution after move.

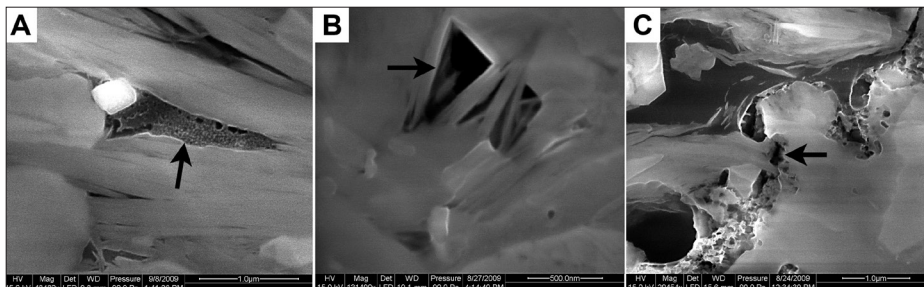


Fig. 3: Ion-milling shales reveals porosity that is conducive to the production of natural gas. (A) pore development in kerogen, (B) pores in the clay fabric, (C) dissolution pores at margin of carbonate grains.

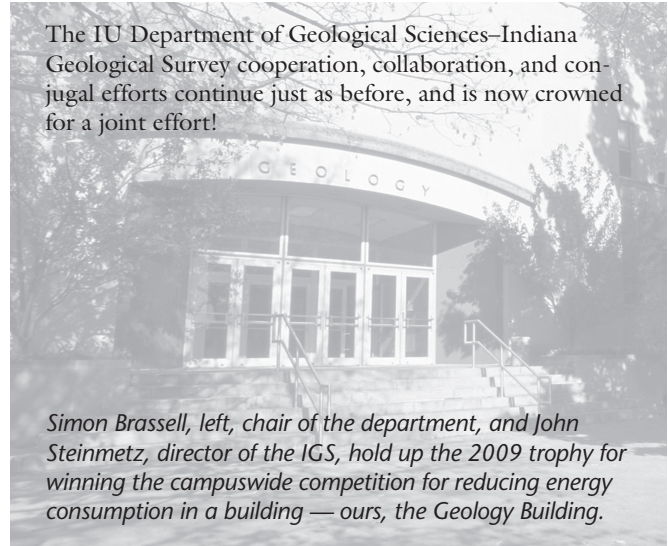


The current flume lab in the basement of the Geology Building. These racetrack flumes for mudstone research are unique in the world. They have successfully produced an array of primary sedimentary structures in clay-sized sediments that have direct analogs in the rock record. New grant support from NSF supports the current construction of a second flume lab on the fifth floor of the Geology Building, where we have reclaimed space from the School of Public and Environmental Affairs.

Department, IGS collaboration recognized with 'green' trophy



The IU Department of Geological Sciences–Indiana Geological Survey cooperation, collaboration, and conjugal efforts continue just as before, and is now crowned for a joint effort!



Simon Brassell, left, chair of the department, and John Steinmetz, director of the IGS, hold up the 2009 trophy for winning the campuswide competition for reducing energy consumption in a building — ours, the Geology Building.

Department of Geological Sciences Faculty and Staff

Faculty and Research Scientists: Abhijit Basu, David Bish, Simon Brassell, James Brophy, Bruce Douglas, Jeremy Dunning, Erika Elswick, Michael Hamburger, Claudia Johnson, Kaj Johnson, Chusi Li, Gregory Olyphant, Gary Pavlis, P. David Polly, Lisa Pratt, Edward Ripley, Peter Sauer, Juergen Schieber, Arndt Schimmelmann, Christine Shriner, Laura Wasylenki, Robert Wintsch, and Chen Zhu

Adjunct and Other Faculty: Henk Haitjema (SPEA), Brian Keith (Survey), Sally Letsinger (Survey), Adam Maltese (Education), Maria Mastalerz (Survey), Peter Ortoleva (Chemistry), Michael Prentice (Survey), Carl Rexroad (Survey), John Steinmetz (Survey), and Jeff White (SPEA)

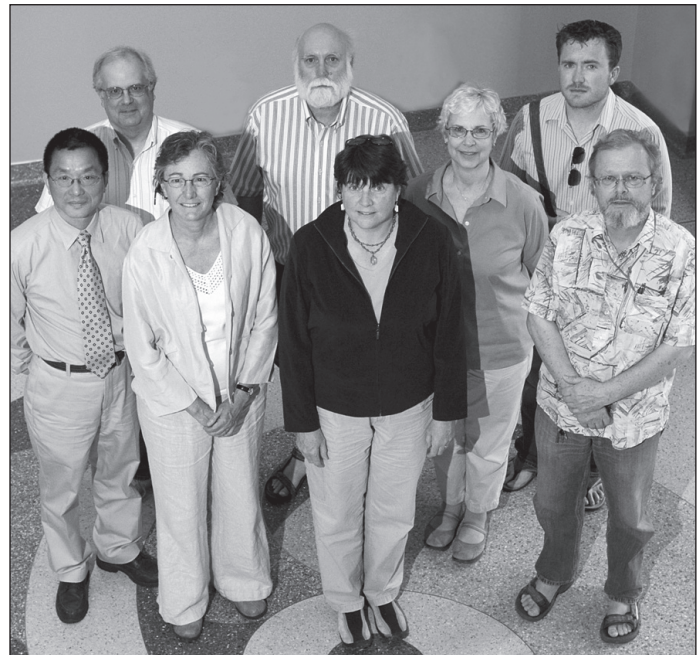
Visiting Scientists and Postdoctoral Fellows: Richard Lanham, Sasha Wilson, Yi-Rong Yang, and Seth Young

Emeriti Faculty: Robert Blakely, David Dilcher, J. Robert Dodd, John Droste, Donald Hattin, Erle Kauffman, Enrique Merino, Haydn H. Murray, Albert Rudman, and Lee J. Suttner

Staff: John Bogeman, administrative support; Lindsay Bugher, administrative support; Pam Christenberry, grants monitor/administrative support; Ken DeHart, computer systems manager; Ruth Droppo, graphic design; Donna Hackney, administrative assistant/fiscal officer; Mary Iverson, student records; Andy Ruff, Geological Sciences/BSES undergraduate advisor; Terry Stigall, geophysics electronics technician; Steve Studley, MSB-II building manager; Mark Toensing, resident manager, IU Geologic Field Station; and Joanna Wall, accounting associate, Geological Field Station, and alumni development coordinator

Library: Lou Malcomb (librarian) and Linda Stewart (campus library coordinator)

Making the move



More than half of our analytical laboratories moved to the new second Multidisciplinary Science Building (MSB-II) in 2010. The pioneers are, back row, from left: Steve Studley, Craig Moore, Ruth Droppo, and Adam Johnson; and front row: Chen Zhu, Lisa Pratt, Erika Elswick, and Juergen Schieber.

Acknowledgements

We are deeply grateful to all faculty, staff, and students in the department and in the Indiana Geological Survey for helping out so generously in bringing out this issue of the *Hoosier Geologic Record*. **Lee Suttner** and **Don Hattin**, especially, have been role models in inspiration, patience, and selfless dedication to this *HGR*. We are particularly indebted to **Barbara Hill**, **John Day**, and **Deborah DeChurch** of the Indiana Geological Survey for working far, far beyond the call of duty toward this issue of *HGR*.

Awards & Ceremonies

Our most cherished moments and memories are those of award ceremonies where we honor students, alumni, and distinguished scientists who may visit the Department of Geological

Sciences and deliver erudite lectures. We furnish a sampling of student awards, graduation smiles, the more formal awards to Tudor Lecturers, plus our highest award, the Owen Award.

Spring Awards Ceremony

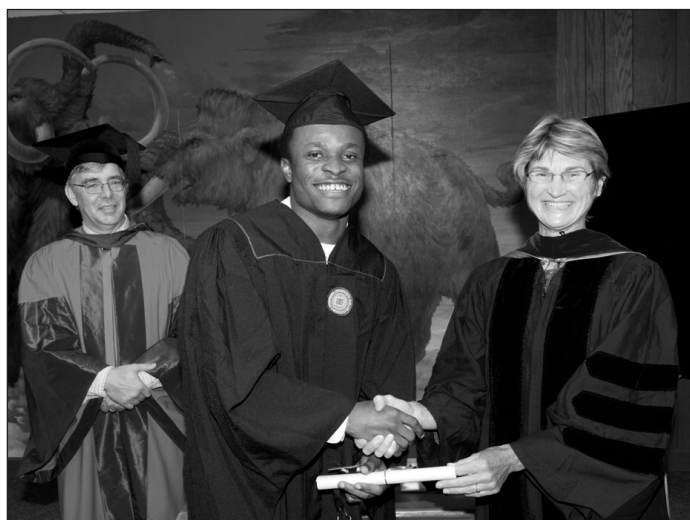


Hsiu-Wen Wang, right, receives an Estwing hammer, winning the Best Graduate Student Award from Director of Graduate Studies Claudia Johnson.



Crystal Hout, right, receives the Departmental Citizenship Award for outstanding service from Director of Undergraduate Studies Robert P. Wintch.

Graduation Congratulations



Claudia Johnson, right, congratulates Chinaemerem Kanu on his graduation while department Chair Simon Brassell looks on.



Department chair Simon Brassell, right, congratulates Martha Growdon on her graduation.

Tudor Distinguished Lecturers



Henry Posamentier, left, the 2010 Daniel Tudor Lecturer, receives the memorial plaque from department Chair Simon Brassell.



Michael Bostick, left, the 2009 Daniel Tudor Lecturer, receives the memorial plaque from Chair Simon Brassell.

Owen Award Winners



Mark Leonard, MA'79, right, receives the 2008 Owen Award from Simon Brassell.



David J. DesMarais, PhD'73, left, receives the 2009 Owen Award from Simon Brassell.



Wayne Bundy, MA'54, PhD'57, left, receives the 2010 Owen Award from Simon Brassell.

Learn about lectures in advance!

Would you like to learn about colloquia and other lectures before they happen? Perhaps you live in or near Bloomington and would like to attend our lectures on occasion. Send your e-mail address to jbogeman@indiana.edu, and tell us that you would like to be put on our "This Week in Geological Sciences" mailing list.

Geologic Field Station Update

Field Station under new manager

Mark Toensing is our new resident manager. He and his wife, Kathi, enjoyed their first summer season in Montana; Toensing did an excellent job in terms of maintenance, supervising a superb kitchen staff, and tending to the needs of approximately 100 students and a total of up to 120 residents at one point. We are confident that the Toensings will help us to keep the Field Station the premier facility in North America for the teaching of geology in the field.

Student enrollments again reached near-record levels. We had 72 students in G429 and 21 in G329. Taken together with seven AIs, plus faculty and staff, the Field Station was at near capacity for five weeks. In addition to **Clara Cotten** (Biology), **Bruce Douglas**, **Erika Elswick**, and **Ed Ripley**; **Candace Kaires-Beatty** (Winona State), **Sue McDonald** (Kansas Wesleyan), **Andrew Oliphant** (San Francisco State), and **Eric Riggs** (Purdue), served as faculty members. **Suzanne Kairo** of ExxonMobil

also participated as a guest faculty member for part of G429. She helped to assess ways to increase safety in the field, and she hopes to help us develop petroleum-related courses at the Field Station. **Dave Phillips** of UNAVCO worked with Bruce Douglas on a LIDAR option in G429 as well. A small group of students volunteered for the trial offering of this “high-tech” option.

Student enrollments again reached near-record levels. ... Plans for the construction of our new classroom facility are moving forward.

A group of 24 high school students and seven faculty members from the Atlanta area used the Field Station in June. **Lee Suttner** assisted in the instruction for this group. Suttner also led a five-day

reconnaissance excursion of the G429 study areas for a group of six geoscientists and field safety specialists from ExxonMobil and BP. Both companies are exploring ways in which they might use the Field Station as a base for instructional purposes. Another group of about 20 students and faculty from Western Michigan University and Michigan State University, led by **Heather Petcovic**, used the Field Station for about two weeks after G429 and G329 departed. Their work focused on student learning in the field and how this can best be evaluated.

Plans for the construction of our new classroom facility are moving forward. We have a commitment from the College of Arts and Sciences that matches the funds that have been raised via our campaign, so we anticipate breaking ground in the spring. **Tom Morrison**, vice president for capital projects and facilities, and **Bob Meadows**, university architect, both visited the Field Station during the fall.

Support still needed in final phase of endowment campaign

At the start of the 2009 calendar year, the Department of Geological Sciences officially launched a three-year, two-phase campaign to create a \$3 million endowment for the Judson Mead Geologic Field Station in Montana.

The \$1.5 million target of the first half of the campaign, “Touching the Heart, Inspiring the Mind,” was met on June 1, 2010, with a major gift from, fittingly, the late Professor and Mrs. **Judson Mead**. This brought the then total of contributions, pledges, and planned estate gifts to slightly over \$1.6 million.

By Feb. 1, 2011, the campaign total had risen to slightly over \$2.25 million, in large part because of a truly wonderful pledge of oil royalties from **Thomas G. Fertal**, BS’75, the single largest pledge to the campaign.

More than \$200,000 of the Mead and Fertal gifts has been matched by the College of Arts and Sciences in order to permit the start of construction later this year of a new classroom/geotechnology center on the Montana campus.

We have been overwhelmed by the incredible support of the campaign, nearly 60 percent of which has come from former students who did not receive degrees from Indiana University. Although we remain some distance from achieving our ultimate \$3 million goal by the end of 2011, we are confident that the goal will be exceeded.

Emphasis in this last year of the campaign will be placed on attraction of planned gifts such as bequests, charitable trusts, and annuities. Please think about including the Field Station in your long-term estate planning, or let us know if you have already done so. And because of tax legislation signed by President Barack Obama in December, if you are 70-and-a-half years or older, direct IRA charitable distributions of up to \$100,000 per taxpayer, per taxable year, from traditional or Roth IRAs can be made.

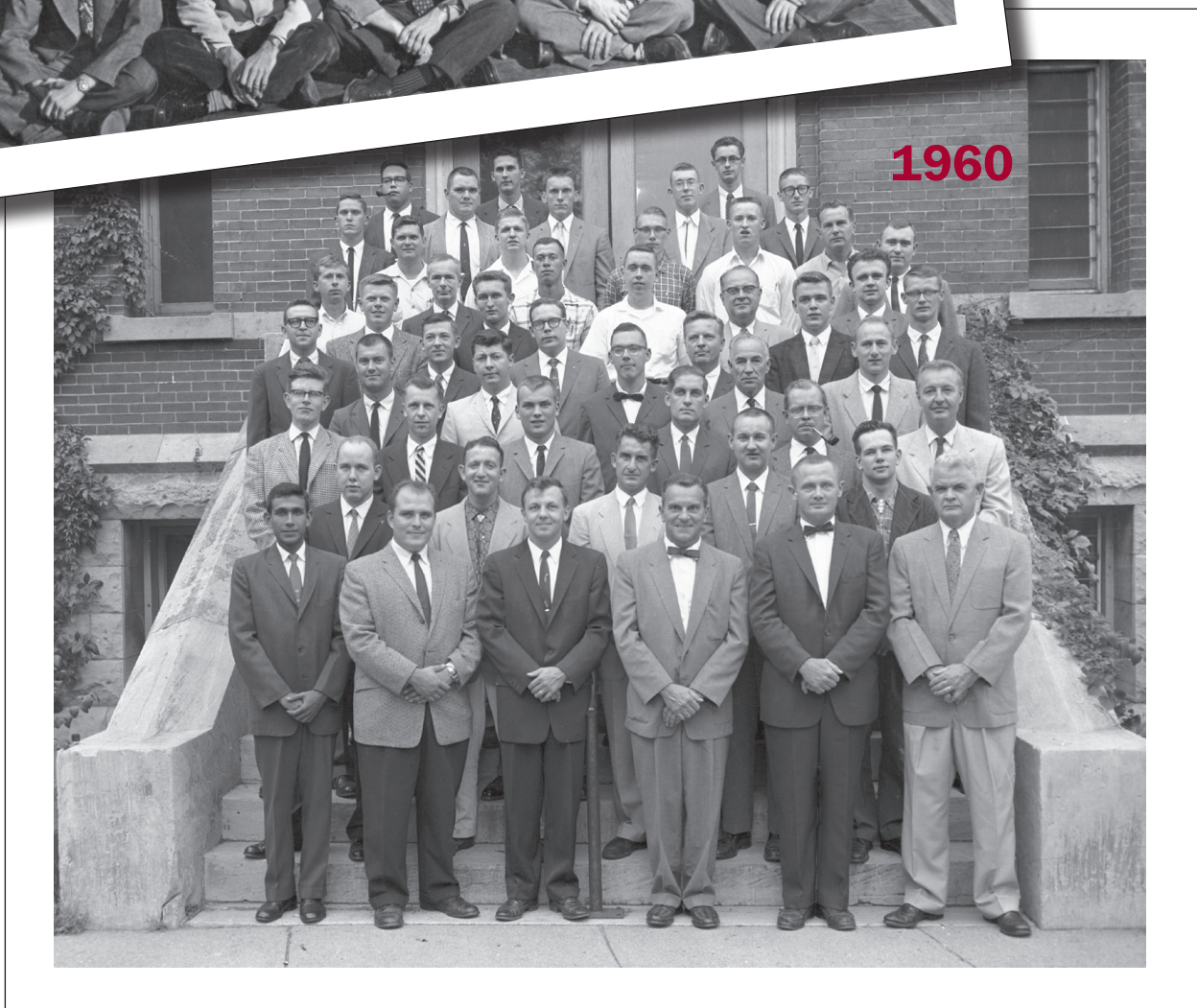
Such a contribution will result in multiple benefits. Your gift is not included in your adjusted gross income



for federal income purposes and can be counted toward your required minimum distribution. The gift can also be treated as if made during 2010 if completed by the end of 2011. Moreover, this is a convenient way to touch the lives of scores of future students whose hearts and minds may be touched as deeply as yours during the time you first experienced the reward and satisfaction of learning geology in the field.

Please contact Professor Emeritus **Lee J. Suttner** (suttner@indiana.edu) for more information about these and other options for planned gifts.

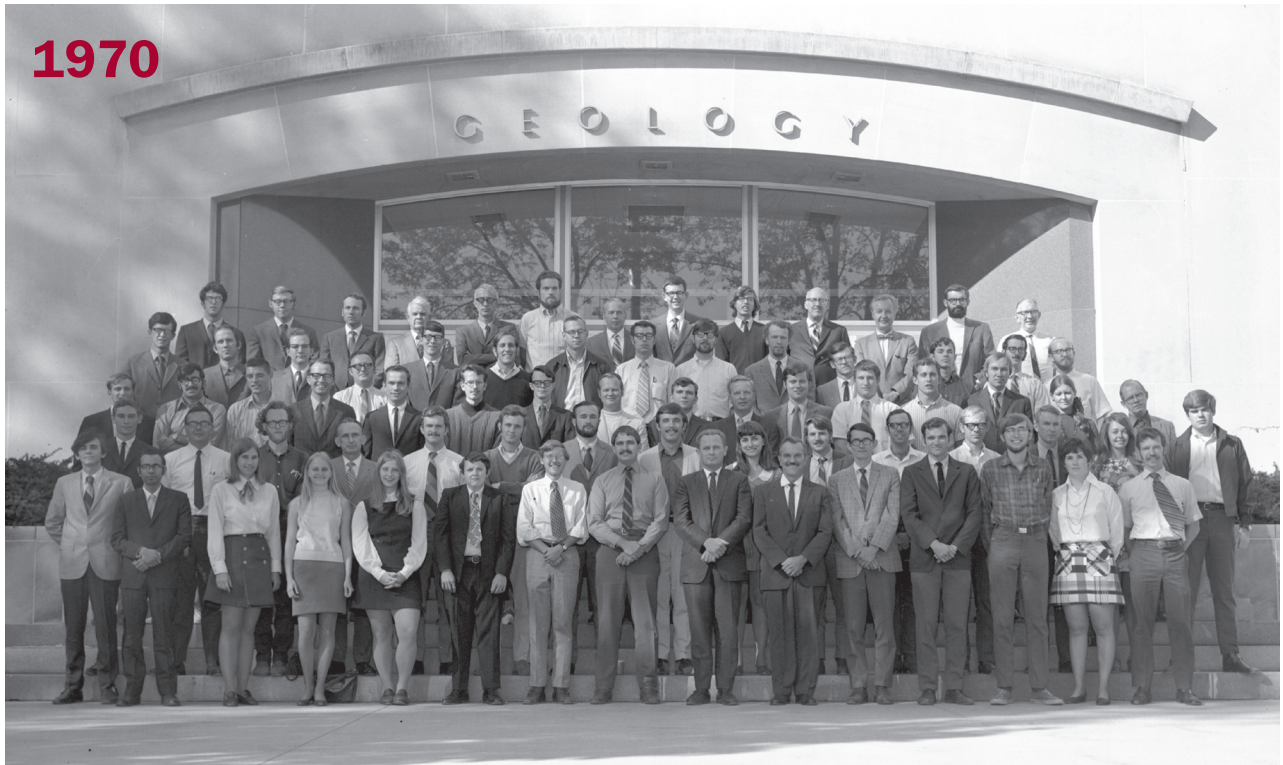
Hoosier Geologic Record Nostalgia



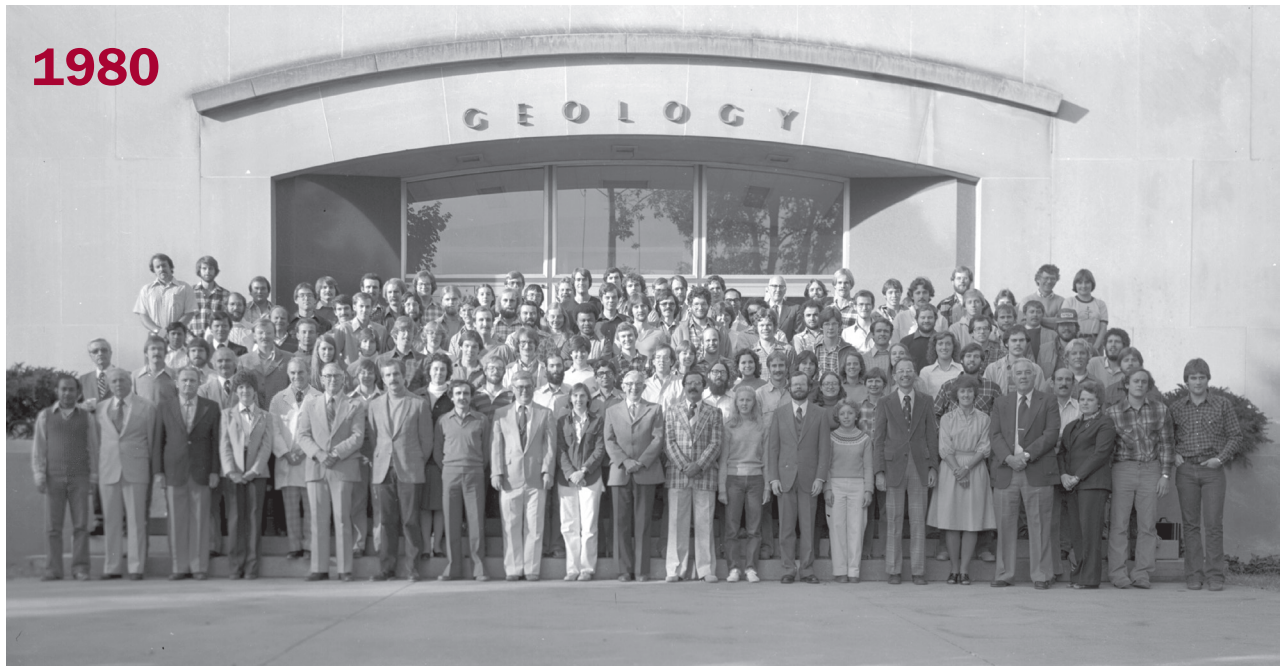
**G
E
O
L
O
G
Y
@
I
U**

More images from the past ...

1970



1980



Indiana Geological Survey Update



IGS geologist **Brian Keith** received the AAPG John T. Galey Memorial Award. The award is the highest honor bestowed by the Eastern Section. It recognizes distinguished geoscientists for their outstanding accomplishments and contributions to the profession, especially as the efforts have been directed toward the betterment of society.

Awards

IGS Cartographic Services supervisor **Kim Sowder** received the IU Staff Merit Award for her years of dedication and service.



The Indiana Mineral Aggregates Association recently honored **Nelson Shaffer**, head of the Indiana Geological Survey's Coal and Industrial Minerals Section, with the honorary "Aggie Award" for 2009. He was presented the award for more than 35 years of service to the aggregates industry.

The Eastern Section of American Association of Petroleum Geologists named **John C. Steinmetz**, director of the Indiana Geological Survey, recipient of their George V. Cohee Public Service Award. This award is presented annually to geologists in recognition of distinguished service and achievement in public affairs.



Transitions



Todd A. Thompson, MA'84, PhD'87, is the new IGS assistant director for research. An IU geology alumnus, he has an international reputation for his research on past lake-level change in the Great Lakes and concomitant shoreline behavior.



In memoriam

Norman Hester, former state geologist and director of the IGS, died in December 2009. His friendship, enthusiasm, and generous nature are greatly missed by the staff of the IGS.

Walter Gray is the new IGS education and outreach coordinator. He has considerable experience as a science teacher at the elementary-, middle-, and high-school levels in both North Carolina and Indiana.



Other IGS news

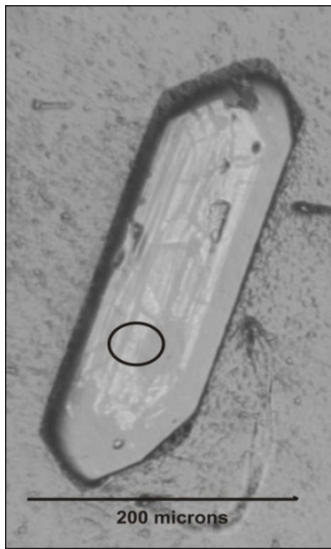
The IGS served as host for the nation's first Geoscience Data Preservation Techniques Workshop held in Bloomington. The workshop was co-sponsored by the Association of American State Geologists and the USGS.

The IGS published *Geology of the Late Neogene Pipe Creek Sinkhole* (Grant County, Indiana) — a volume of collected papers concerning different aspects of the geology of this interesting site. Uncovered in 1996 by workers at the Pipe Creek Jr. Quarry, the Late Neogene sinkhole has yielded the first preglacial fauna from the age of mammals ever found in the interior of the eastern half of North America.

Faculty/Research Scientists Notes

Faculty news

U-Pb SHRIMP dating of zircon phenocrysts in tuff units of Proterozoic sedimentary basins in peninsular India by **Abhijit Basu** and colleagues has revised the closure age of the basins from about 520 Ma to about 1000 Ma, i.e., by about one “Phanerozoic Time-span.”



Michael Hamburger is recovering from his foray in university administration, including four years as associate dean of the faculties and a one-semester stint as interim chair. He continues his work leading a campus sustainability effort, which has grown into a nationally recognized effort combining academic and operational programs related to environmental stewardship and management of natural resources. He is continuing his research work on midcontinent tectonics and tectonic and magmatic processes in the Philippine islands. PhD student **Gerald Galgana** took on a prestigious three-year postdoc at the Lunar Planetary Science Institute in Houston, where he works on both terrestrial and Venusian volcanoes. Undergraduate student **Kim Shoemaker** completed a thesis on the 2008 Mt. Carmel, Ill., earthquake, and won “best presentation” honors at the IU Geology Crossroads conference. Together with **Gary Pavlis** and electronic technician **Terry Stigall**, Hamburger leads the IU PEPP Earthquake Science program, a nationally recognized science outreach program that brings state-of-the-art seismological research into high-school classrooms, colleges, and museums in and around Indiana. He teaches our popular “Shake & Bake” course (Earthquakes and Volcanoes) and an innovative introductory-level field course on tectonics and volcanism taught in California (Volcanoes of the Eastern Sierra Nevada). He teaches “Fundamentals of Plate Tectonics” and, jointly with Gary Pavlis, “Analysis of Earthquake Seismograms” at the graduate level.

Claudia Johnson teamed with colleagues **Erika Elswick** and **Chen Zhu** in the geology department; Mehmet Dalkilic in the School of Informatics and Computing, Bloomington; Charles Beeker, HPER; and Geoff Conrad, anthropology department, for collaborative underwater biodiversity studies involving coral recruits on cultural and historical artifacts in the Dominican Republic and Bonaire.



During the summer of 2010, **Bruce Douglas** developed a pilot version of a weeklong module designed to apply Terrestrial Laser Scanning (see photo of instrument being used at the Geologic Field Station, at left) to various problems encountered while conducting field geology. The application was embedded within the Indiana University G429 field course. The other problems selected included determining the magnitude and type of normal fault displacement recorded in Quaternary sediments, the potential for using a large bedrock fault scarp to determine displacement intervals, and the geometry of the sedimentary architecture of a shoaling carbonate bank.



Tracking fault movement based on erosion rollback of a fault-scarp estimating earthquake magnitude based on the length of the scarp segments using a Terrestrial Laser Scanner.

Above: Research crew in the field in the Dominican Republic, standing at the site of Christopher Columbus’s homestead in the New World. Pictured are, from left, Erika Elswick, John Foster, Claudia Johnson, Charlie Beeker, Geoff Conrad, and Erle Kauffman.

Visit us on the Web!
www.indiana.edu/~geosci

Visit the Judson Mead
Geologic Field Station at
www.indiana.edu/~iugfs

Visit the Indiana Geological
Survey online at
www.igs.indiana.edu.





Cindy Ebinger (Rochester), former president of AGU Tectonophysics Section, presents Kaj Johnson with the Early Career Award.

Kaj Johnson is the first recipient of the American Geophysical Union's "Early Career Award" (Tectonophysics Section). The citation noted Johnson's "breadth of scientific interest, the depth of his understanding of geodynamic research problems, his technical creativity in finding innovative ways to address them, and his generosity in sharing ideas and successes with students, postdocs, and scientific collaborators." Johnson is continuing his research on the tectonics of Taiwan and neotectonics of California with a team of postdocs and students. He leads the undergraduate Structural Geology class and has developed two new graduate-level geophysics courses, Mechanics for Earth Sciences, and Geophysical Inverse Methods.

Chusi Li's contributions to ore genesis in magma plumbing systems (see Fig. 1) have gained international recognition lately, including the 2011 Regional Vice President Lecturer awarded by the Society of Economic Geologists, which currently has approximately 6,000 members worldwide.

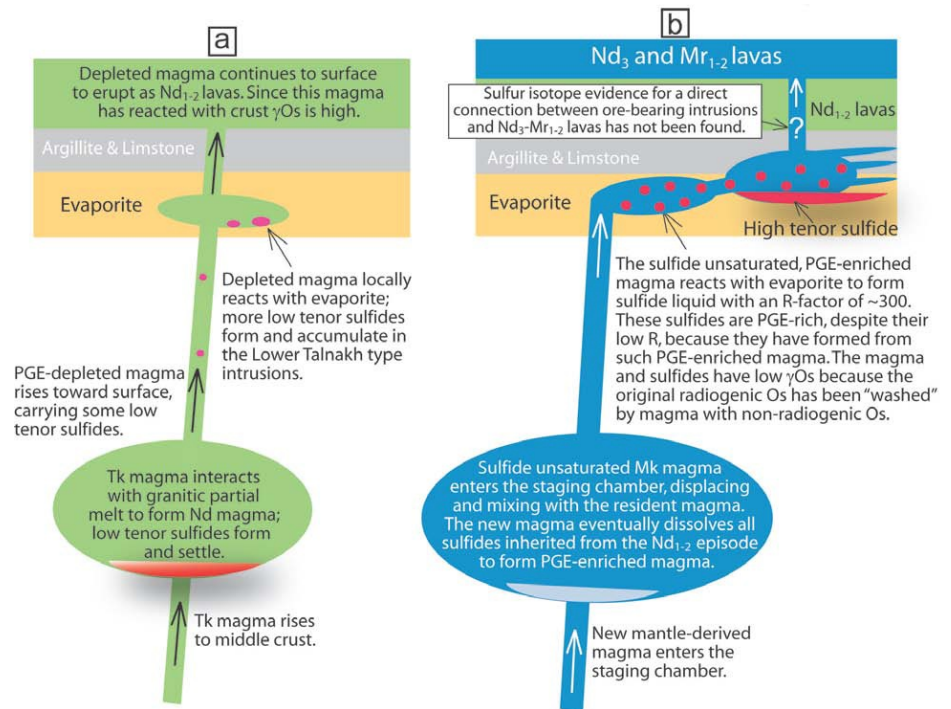


Fig. 1. Magma plumbing systems.

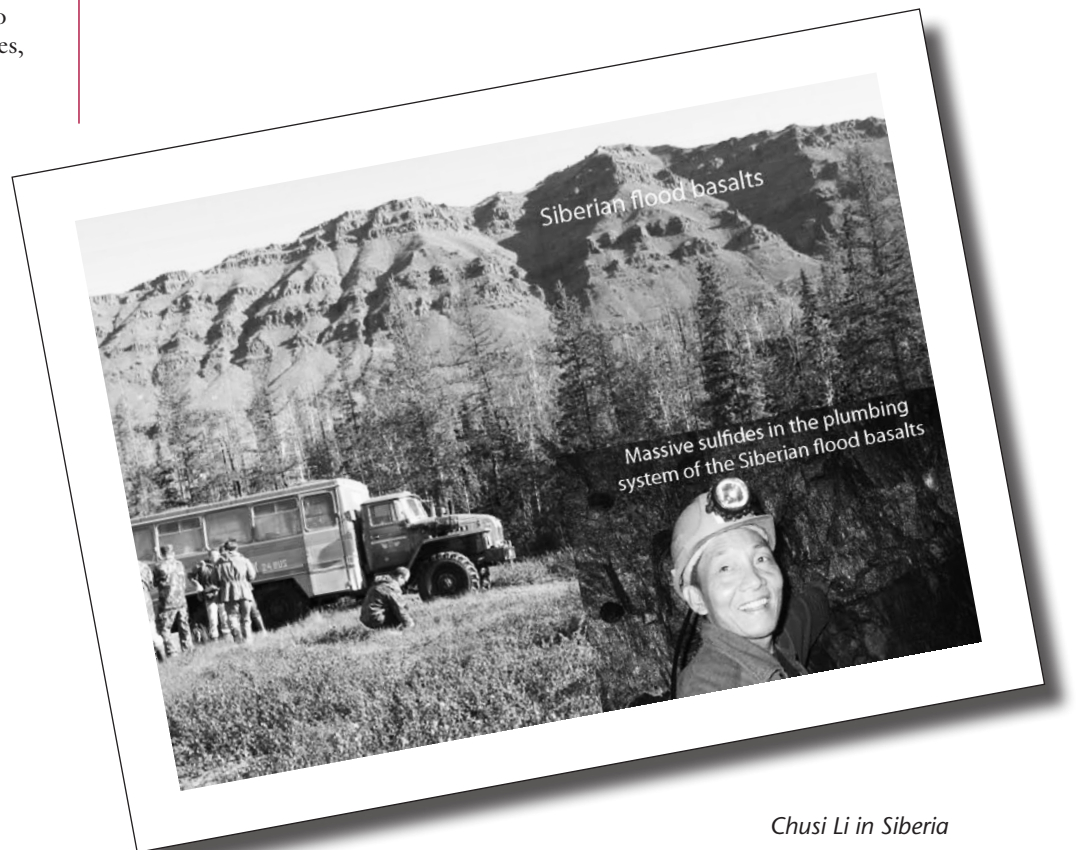
Connect with your IU Alumni Association.

To join, renew your annual membership, upgrade your annual membership to life, or buy a gift membership for someone you love:

Call
(800) 824-3044

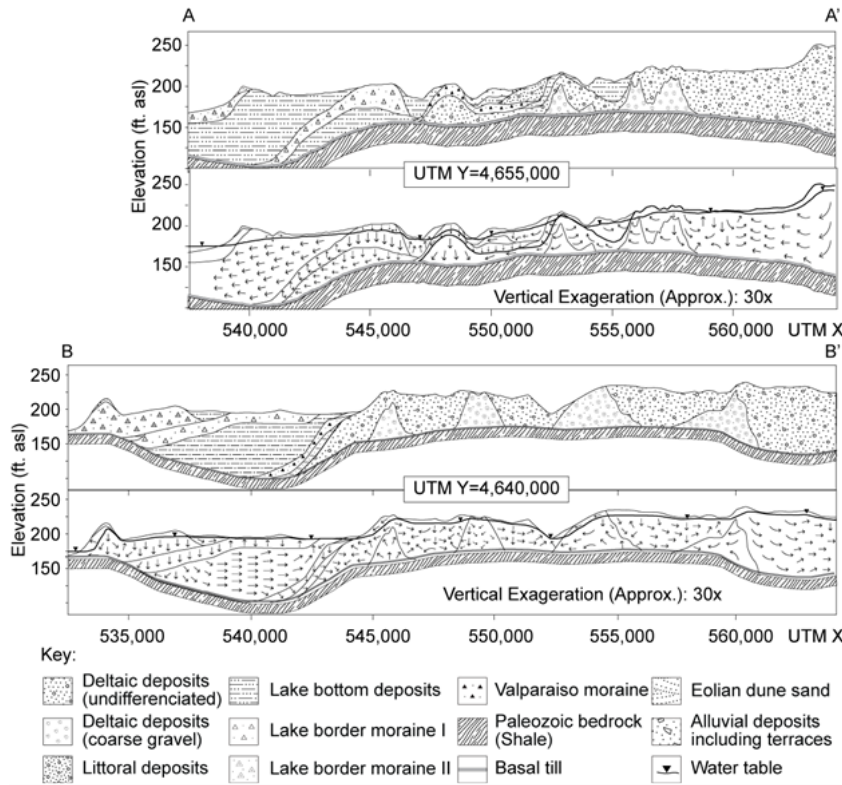
E-mail
iuaamemb@indiana.edu

Go online
alumni.indiana.edu

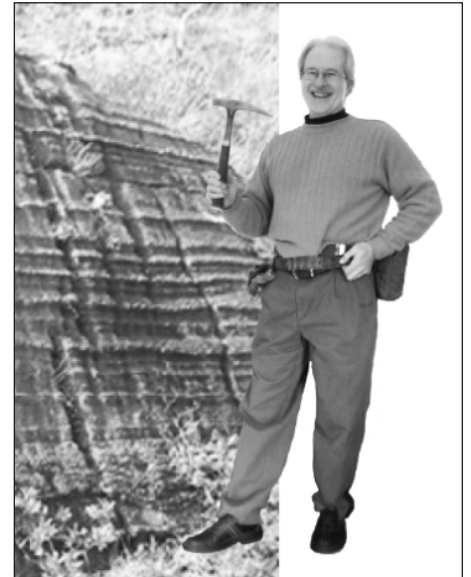


Chusi Li in Siberia

Greg Olyphant is studying sedimentary architecture and groundwater flow in a glacial-lacustrine depositional setting in Berrien County, Mich. This research is being done in collaboration with geologists from the USGS and local state geological surveys under the auspices of the Midwest Glacial Mapping Coalition. Continuing into the eighth year of consecutive funding (Sally Letsinger is PI on current grant), Olyphant's goal is to demonstrate the importance of incorporating high-resolution, three-dimensional geological framework models into groundwater resource assessments and protection strategies.



Selected cross-sections showing sedimentary architecture and groundwater flow in a glacial-lacustrine depositional setting (Berrien County, Mich.)



Ed Ripley hammers away at a stratified magmatic deposit.

Ed Ripley is becoming a globe-trotting invited lecturer on topics of Cu-Ni-PGE (platinum group elements) mineralization, hampered only by a freak injury at the Field Station. He has been selected to head the Commission on Deposits in Mafic and Ultramafic Rocks, International Association on the Genesis of Ore Deposits. Ripley and **Chusi Li** are currently working on new Ni-Cu-PGE mineralization discovered within the famous Duke Island Ultramafic Complex in southeastern Alaska. The complex contains the most spectacularly layered igneous rocks in the world.

David Polly along with colleagues at University of Toronto, University of Florida, and the Smithsonian Tropical Research Center published the discovery of the 43-foot-long 2,500-pound *Titanoboa cerrejonensis*, the largest snake in Earth history, which is from the Paleocene of Colombia (63 Ma).



Students Michelle Lawing and Beth Reinke demonstrate the girth of *Titanoboa cerrejonensis*, the largest snake in Earth history, on a poster exhibited in the department.

Arndt Schimmelmann



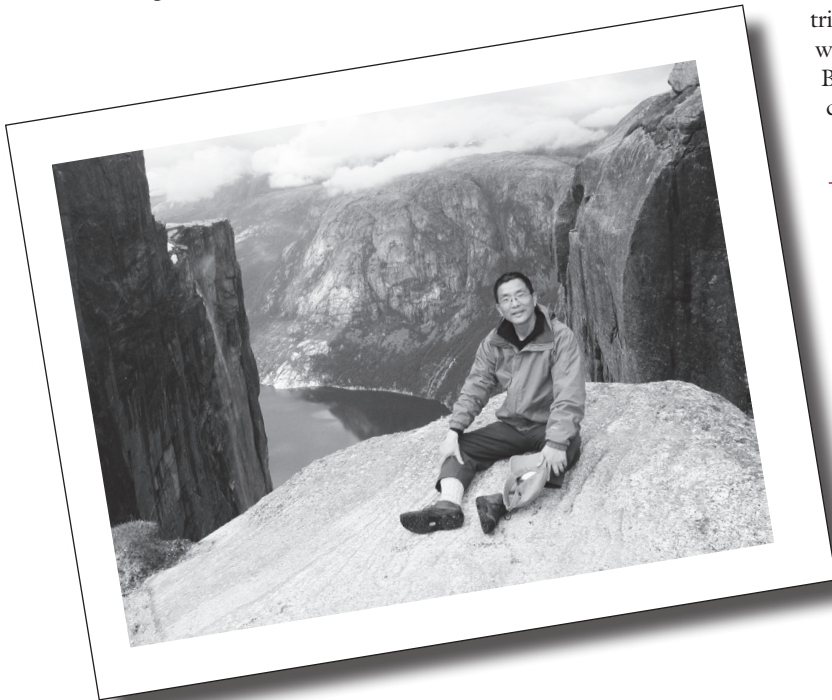
Arndt Schimmelmann onboard the R/V Robert Gordon Sproul in the Santa Barbara Basin off California. He is standing next to a box corer used for recovery of up to 300-year-old sediments.

Peter Sauer returned to Bloomington from an academic-year visit to Durham University, England, where he collaborated on research on late Quaternary mammal bones with his host, Darren Grocke. This afforded him access to bones from a diverse fauna of several of the rich late-Glacial and early-Holocene archaeological sites that include Neanderthal remains. The ongoing research will elucidate climate fluctuations and dietary change during the major climatic shifts at this time. The year abroad also allowed some pilgrimages to classic geologic sites such as Siccar Point (as in the accompanying picture), among many others.

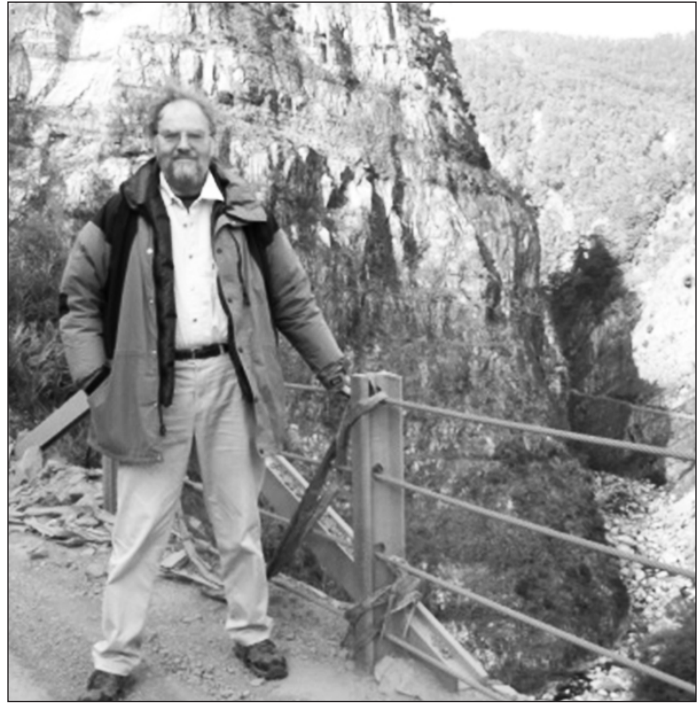


Peter Sauer visited Siccar Point during his year abroad.

Chen Zhu was a Fulbright Scholar at University of Oslo, Norway in 2009. He hiked to the famous Kjeragbolten outside of Stavanger, where a boulder is caught in between two cliffs. But he wimped out stepping on the boulder, citing the need of raising two kids.



Chen Zhu in Norway.



Bob Wintsch in the mountains of eastern Asia.

Bob Wintsch is continuing to push his research along and across the Appalachians, in collaborations with USGS colleagues John Aleinikoff, Mick Kunk, Nick Ratcliffe, Scott Southworth, and Greg Walsh. He is also moving his research farther east — to the Far East, where he has visited every late fall for the last four years, in the highest and youngest mountains in eastern Asia (Taiwan), where fieldwork in these mountains can be a challenge when the roads disappear (see picture below). Wintsch is now funded by the NSF to work on the Red River shear zone in Yunnan Province in China, and on southeast into Vietnam. This is the shear zone that accommodated the extrusion of Indochina caused by the collision of India with southern Asia.

Wintsch is also the primary instructor for the G420 field trips. Thanks to our generous alumni, Wintsch led a two-week field course in Scotland to study the world-famous Buchan and Barrovian metamorphic sequences, and the classic Lewisian Gneisses and the Moine thrust.

Editorial Corner

Please take a moment to advise us.

Should we continue with producing and mailing paper copies of the *Hoosier Geologic Record* and the *Alumni News*? Or, would occasional e-mail and updated Web information be acceptable to you?

Regardless, please send your current e-mail address to geochair@indiana.edu or jlwall@indiana.edu so that we can keep you informed about your alma mater.

Emeriti faculty news



Emeriti faculty members, from left, Haydn Murray, Don Hattin, Bob Dodd, Lee Suttner, and Enrique Merino allow Ed Ripley to shoot while at the regular Faculty Coffee on Fridays in the Owen Room, which was furnished by alumni and other gifts.

If he is not making coffee for colleagues, writing books, or on a steam engine, **Don Hattin** can still be seen in a cape.



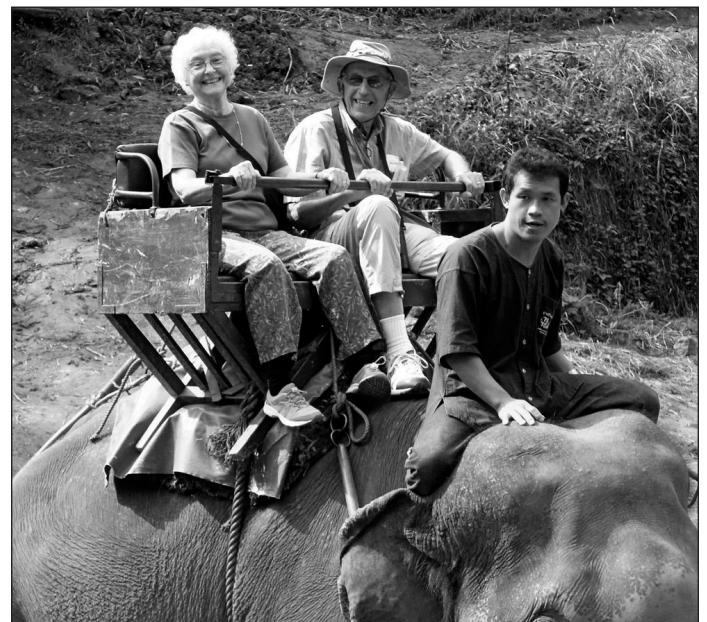
Don Hattin on an exposure of Permian strata during G-420 trip to the Four Corners area, June 1993.

Bob Dodd makes regular visits to the Department of Geological Sciences, where he and **Don Hattin** organize the Friday morning coffees in the Owen Room for faculty and research scientists. Bob and his wife, Joann, still travel extensively. Their most recent international trips were to the Amazon River and Thailand.

Bob continues to bike, hike, walk, and run (although his running speed is approaching his walking speed). He has been very active in the local Audubon Society chapter and makes frequent birding trips with other members. He recently completed an extended stint as editor of the local Audubon chapter newsletter, the *Leaflet*.

He volunteers at the Monroe County History Center where he is doing research on small communities, past and present, in the county. He is a member of the Cemetery Committee and is working on locating and researching the history of the 300-plus active and historic cemeteries in the county. He is the official historian for the IU Retirees Association.

And, yes, he still grows roses.



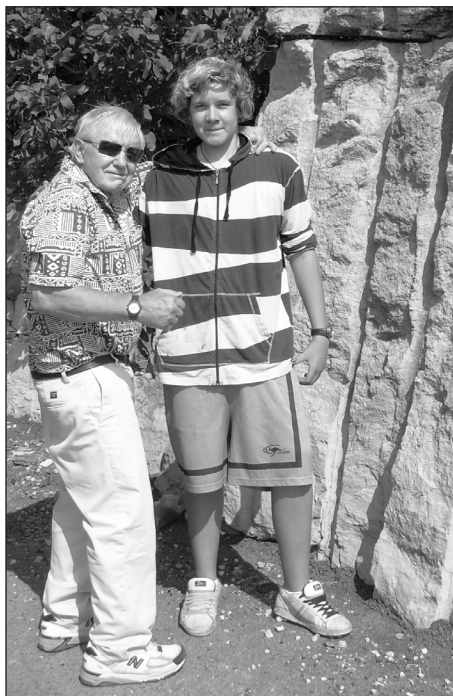
Bob and Joann Dodd atop an elephant.



Enrique Merino on Paleozoic limestone, light gray, left unreplaced between fingers of dark gray dolomite, in León, northwestern Spain.

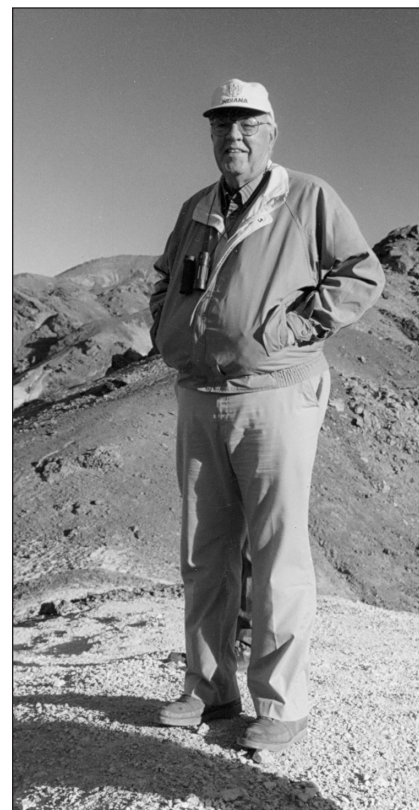
Last January **Enrique Merino** and his wife, Consuelo (retired as chair of the IU Department of Spanish and Portuguese), visited their younger son Miguel, a musician who's been living in Cairo for two years. Their older son, Diego, has been traveling in Southeast Asia with his wife for more than a year. Enrique and Consuelo don't know if their sons have gotten an education from their parents, but it appears that the parents are certainly getting one from them. While Consuelo has taken up volunteering and translating, Enrique continues to work on his dynamic-geochemical models of terra rossa genesis (with IU alumnus **Amlan Banerjee**, PhD'09, in New Mexico) and of burial dolomitization (with À. Canals at Barcelona). His 2009 paper on the paleomagnetic properties of terra rossa was in collaboration with geomagnetist Joe Meert at Florida and with IU alumnus **Frank D. Pruett**, BS'57, MA'59, who had worked on the matter for his 1959 thesis with Professor **Judson Mead**.

For one month last summer, Enrique's most intense activity was watching two World Cup soccer matches per day, usually at the Uptown Café, culminating in the suspenseful, high-voltage, deserved victories of Spain over Germany in a semifinal and over Holland in the final. We can surmise that he was ecstatic.



Erle Kauffman and grandson Christopher examine Mississippian limestone in Indiana after a three-week paleontologic and geologic excursion to the Cretaceous rocks of Colorado and Kansas.

Erle Kauffman celebrated his 77th birthday with research, research, and more research, as well as enjoyment. He is editing five manuscripts for submission to journals, and with luck, all will be published by the next version of the *HGR*. Completed research themes include tracing the Cretaceous Cenomanian-Turonian boundary through the northern U.S. and southern Canada, a mosasaur-bitten nautiloid, Jurassic fossils from Antarctica, and the granddaddy of them all — the geologic and paleontologic anatomy of an ecotone, Huerfano Park, south-central Colorado. These are in addition to published works dealing with “Warm Cretaceous Climates” in the *Encyclopedia of Paleoclimatology and Ancient Paleoenvironments* co-authored with wife **Claudia Johnson**. Pleasure trips during the year were numerous and included Bonaire, the Dominican Republic, Atlanta, Taos, and his much beloved Rocky Mountains. He continues to visit his three children and six grandchildren, who range in age from 20 to 2. Claudia and Erle enjoy gardening in the rich environment around their Bloomington home, as well as attending musical, theatrical, and operatic performances in this lovely city.



Haydn Murray at a white bentonite deposit in San Juan Province in Argentina.

Lee Suttner remains engaged in fundraising, development, and alumni relation activities for the department, in addition to continuing to teach short courses at the Field Station. Since the endowment campaign for the Field Station began two years ago, he estimates that he has met in person with more than 150 department and Field Station alumni in connection with efforts to build a \$3 million endowment for facility enhancement and curriculum development in the Montana program. Most of his travels have centered on the Houston, Denver, and San Francisco areas, but alumni have also been visited in Arizona and Oregon.

For the past several summers he has been teaching four- to five-day field courses in Montana for groups of students from three different high schools in the Atlanta area. He is truly amazed at how fast these young students learn how to construct a geologic

(continued on page 18)



Haydn Murray is still active at an age of 86 years. In the department he continues to serve on PhD committees where clay mineralogy is involved. **Autumn Kaylor**, BS’08, who worked in his Clay Lab during her junior and senior years, was awarded an MS degree from the University of Texas and is now employed in the Chevron Lab of **Andrew R. Thomas**, MA’81, who received his degree at IU in clay mineralogy. Haydn consults for Thiele Kaolin Co. in Sandersville, Ga., and visits them two days per month. He serves on the board of directors of SABIA Inc., in San Diego. SABIA manufactures neutron activation analyzers which are placed on moving belts in the coal and cement industries, giving instantaneous elemental analysis. Also, he involved in a white bentonite deposit in San Juan Province in Argentina. (See photo). As a member of the National Academy of Engineering, Section 11 (Earth Resources Engineering), he keeps busy with a lot of work and reading. “Go IU” has been and is his current motto.

Lee Suttner and his wife, Ginny, stand outside the newly constructed faculty houses at the Judson Mead Geologic Field Station.

Faculty Research Grants

Listing of principal investigators as of March 1, 2011, of extramural grants that go through our departmental accounting system. Not listed are co-PIs or collaborators on several other externally funded research projects. Please see below.

- **David Bish**, “Quantitative X-ray Diffraction Analysis of Mars Analog Materials” (JPL)
- **David Bish**, “Experimental Measurement of the Stability and Dehydration/Rehydration Kinetics of Sulfate Hydrates under Simulated Martian Surface Conditions” (NASA)
- **David Bish**, “Effects of Shock Metamorphism on Phyllosilicate Spectroscopy” (Planetary Science Institute)
- **David Bish**, “Revealing the Clays on Mars: A Spectral Unmixing Study of Phyllosilicates, Zeolites, Hydrated Silica and Glass” (SETI)
- **James Brophy**, “REE-SiO₂ Systematics for Distinguishing a Fractional Crystallization Versus Crustal Melting Origin for Intra-oceanic Silicic Melts: A Combined Experimental and Field Investigation” (NSF)
- **Kaj Johnson**, “Estimating Frictional Properties of Faults from Geodetic Data” (NSF)
- **Kaj Johnson**, “Kinematic and Dynamic Models of Actively Deforming Lithosphere in the Western U.S.” (NSF)
- **Kaj Johnson**, “UCERF3 Deformation Model Oversight, Review, and Strategic Planning” (USC)
- **Chusi Li/Edward Ripley** “Oxygen and Multiple S Isotope Investigation of Magma-Country Rock Interaction During Early Stages of Magmatism in the Midcontinent Rift System: Constraints from the Eagle Deposit” (NSF)
- **Greg Olyphant**, “Hydrochemical Evaluation and Predictive Modeling of Sulfate-Reducing Bioreactor Cells” (IND DNR)
- **Greg Olyphant**, “Rates and Controls on Toxic Metal Leaching from Coal-Combustion Residues Utilized as Structural Fills in Reclamation Settings: Emphasis on the Midwestern AML Site” (IND DNR)
- **Gary Pavlis**, “Collaborative Research: St. Elias Erosion and Tectonics Project (STEEP)” (NSF)
- **Gary Pavlis**, “Collaborative Research: USArray Data Analysis Workshop for Next Generation of Seismologists” (NSF)
- **Gary Pavlis**, “Imaging of the Mantle of North America with 3-D, Plane-wave Migration” (NSF)
- **David Polly**, “Environmental Sorting of Vertebrate Faunas: Is Guild-level Locomotor and Dietary Ecomorphology and Indicator of Paleoenvironment” (NSF)
- **Lisa Pratt**, “Indiana MetaCyt Initiative” (Lilly Endowment)
- **Lisa Pratt**, “Photochemical Kinetics of Amino Acid Alteration under Simulated Surface Environments on Mars” (NASA)
- **Edward Ripley/Chusi Li**, “Sulfide Mineralization in the Duke Island Complex, Alaska: A Unique View into Conduit Processes in the Sub-Arc Environment” (NSF)
- **Edward Ripley/Lisa Pratt**, “Acquisition of Two Gas Source Stable Isotope Ratio Mass Spectrometers for the Stable Isotope Research Facility (SIRF) at Indiana University” (NSF)
- **Juergen Schieber**, “Experimental Study of Processes Producing Polygonal Patterns in Evaporite Bearing Martian Sediments and Sedimentary Rocks” (NASA)
- **Juergen Schieber**, “Cooperative Agreement Between IU and Anadarko for Shale Research Support” (Anadarko)
- **Juergen Schieber**, “Cooperative Agreement Between IU and ExxonMobil for Shale Research Support” (ExxonMobil)
- **Juergen Schieber/Arndt Schimmelmann**, “Collaborative Research
(continued on page 19)

Emeriti faculty

(continued from page 17)

map and read the rocks with the same skills and techniques he used to teach the mid-level college majors before his retirement. In the summer of 2008 he also very much enjoyed being able to return to teaching at the 100 level with a two-week, three-credit introductory course he taught at the Field Station.

In 2009, working with Scott Tinker, then president of the American Association of Petroleum Geologists, he launched a new two-week program at the Field Station for international students from developing countries. The inaugural course was offered to a group from Nigeria, sponsored by the Nigerian Association of Petroleum Explorationists. **Jim Brophy** co-taught the course with Lee, who has described the experience as one of the most rewarding and satisfying of his teaching career. Two more groups from Nigeria are scheduled to come to the Field Station for two weeks this summer, as well as smaller groups of company employees from Saudi Arabia and Australia.

Lee also spent nearly a week at the Field Station this past summer with geologists from BP and ExxonMobil (including IU alumna **Suzanne Kairo**, PhD’92, who played a major role in organizing the trip). The purpose was to introduce them to the remarkable

geologic diversity surrounding our Montana campus, as part of efforts to attract more industry use of the Field Station. Nearly all of the major mapping sites used by students in G429 were completely traversed in what turned out to be a most physically challenging experience.

During the academic year, Lee also teaches a one-day workshop titled “Management and Leadership Skills for Academic Department Chairs and Institute Directors” (www.academicleadershiptraining.com). Several years ago, at the request of the dean of faculties, he prepared a manual and began teaching this workshop for administrators here at IU. Since then he has presented it at the Annual Meeting of the Geological Society of America and on campuses across the country. In August he was invited to present a three-day version at the University of Cordoba in Cordoba, Argentina.

Lee’s spouse, Ginny, also stays professionally active in her retirement as a consultant in elementary education for the Catholic Archdiocese of Indianapolis. One of her primary responsibilities is on-site evaluation assessment of Catholic schools throughout southern Indiana.

Ginny and Lee enjoy good health and consider themselves lucky to have the opportunity and ability to continue their professional careers in education.

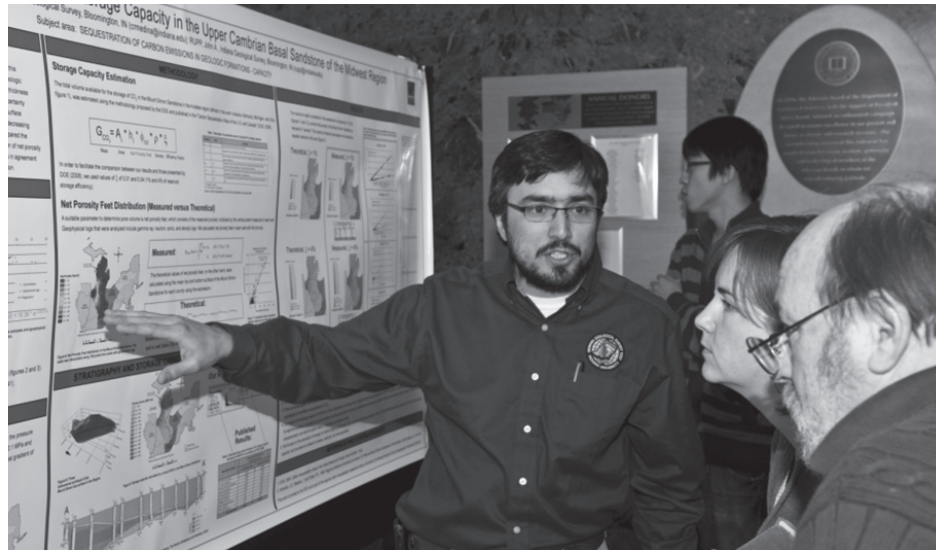
Student News

Sigma Gamma Epsilon and other activities of, by, and for students

During the 2010 calendar year Sigma Gamma Epsilon held the Crossroads Conference in March. Also, ΣΓΕ sponsored the Department of Geological Sciences' fall picnic in September, the winter party, and the Screwball and other awards in December. ΣΓΕ sold lab manuals for a lower-level geology class as a fundraiser along with the development of a geology calendar and T-shirt for fundraising.

Starting in October ΣΓΕ developed a monthly newsletter called the *Map & Compass Monthly*. And now in 2011: the Crossroads Conference held on Feb. 25–26 was received with tremendous enthusiasm among students and faculty. The high attendance was in part facilitated by decoupling Crossroads from visits by prospective graduate students.

(continued on page 20)



PhD student Cristian Medina — also a geologist with the Indiana Geological Survey — explains his poster on carbon dioxide sequestration to intent onlookers.

Research grants

(continued from page 18)

- ETBC: Combined Experimental and Theoretical Study of the Physical Mechanisms Underlying Deposition, Degradation, and Preservation of Marine Organic Carbon” (NSF)
- **Arndt Schimmelmann**, “Collaborative Research: An Ultra-High Resolution, Multiproxy Study of the Past 2,000 Years of Climate Change in Southern California” (NSF)
 - **Arndt Schimmelmann**, “Development of Organic H, C, and N Stable Isotope International Standards for NIST and IAEA: Multi-laboratory Expert Calibration in Support of GC, LC, and EA-IRMS Measurement Sci.” (NSF)
 - **Arndt Schimmelmann**, “Collaborative Research: Geochemical and Isotopic Time-Series of Marine and Terrestrial Degradation of Petroleum in the 2010 Gulf of Mexico Oil Spill” (NSF)
 - **Laura Wasylenki/Lisa Pratt/Edward Ripley**, “MRI: Acquisition of a Multi-collector Inductively-coupled Plasma Mass Spectrometer (MC-ICP-MS) for Geological, Environmental, and Microbiological Research at Indiana University” (NSF)
 - **Robert Wintsch**, “An Integrated Structural, Petrologic and Isotopic Study

of Fabric Evolution in the Ailao Shan-Red River Shear Zone, China” (NSF)

- **Chen Zhu/Lisa Pratt**, “Collaborative Research: Microbial Arsenate Reduction Control on Arsenic in Groundwater” (NSF)
- **Chen Zhu**, “Reducing Uncertainties of Model Predictions via History Match of CO₂ Migration and Reactive Transport Modeling of CO₂ Fate at the Sleipner Project, Norwegian North Sea” (U.S. Department of Energy)

Grants that will become active by summer are:

- **Greg Olyphant**, “Monitoring and Modeling a Large-Scale Experiment to Change the Direction of Ground-Water Flow at the Blackfoot Reclamation Site in Pike County, Indiana: Part 2 Assessing of the Efficacy of Reclamation that Includes the Construction of a Large Wetland/Bioreactor System” (IND DNR)
- **Juergen Schieber**, “Cooperative Agreement Between IU and Shell Oil for Shale Research Support.” (Shell)
- **Juergen Schieber**, “Cooperative Agreement Between IU and Chevron for Shale Research Support.” (Chevron)
- **Juergen Schieber**, “Cooperative Agreement Between IU and Marathon for Shale Research Support.” (Marathon)
- **Laura Wasylenki** “Assessing nickel

isotope fractionation during abiotic processes” (NASA)

In addition, several faculty members are co-principal investigators on many grants that are technically administered through other departments and other institutions.

A few examples follow:

- **David Bish** is a co-PI of seven different projects on the geology, mineralogy, and exploration of Mars and the Moon, all funded by NASA. Interestingly, **Ralph Milliken**, BS’01, is the PI on one of the Mars projects.
- **Erika Elswick, Claudia Johnson,** and **David Polly** are co-PIs in an NSF-funded project to curate the fossil collection in the department.
- **Claudia Johnson** is a co-PI on a USAID-funded project to sustain museums in the sea.
- **David Polly** is a co-PI of projects on dispersals of early humans (Leverhulme Trust); and on Indiana archeology, along with **Peter Sauer**.
- **Laura Wasylenki** is a co-PI to investigate uranium isotopes in carbonates (NSF).

The word is out from NSF that **Gary Pavlis** and **Michael Hamburger** will soon begin a large project to study the structure and dynamics of the North American craton.

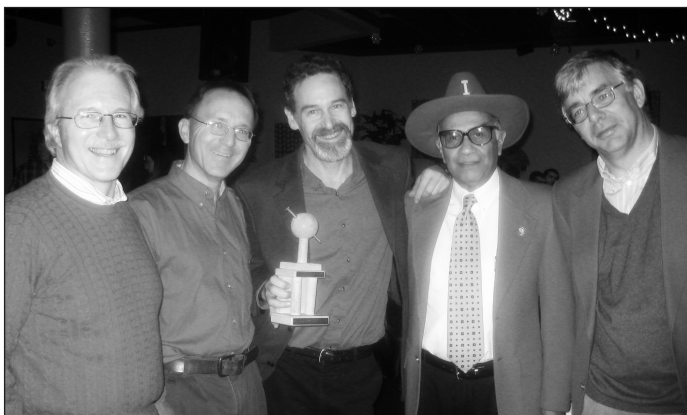
Student news

(continued from page 19)

The holiday party (aka winter party) of 2010 in snow-bound Bloomington was held at the City Grille, where sartorial red dominated all other colors. David Polly handed over his 2009 ScrewBall Award to the newly elected — by pennies — Michael Hamburger. Those near the front had a wonderful view of the knighting ceremony complete with a sword.



The first Screwball, Don Hattin, left, congratulates Michael Hamburger, the 2010–11 Screwball.



2010–11 Screwball Michael Hamburger, center, needs support to stand on his own while celebrating his award handed over by David Polly (not shown in this picture).



Silent auction display to raise funds for the Crossroads Conference that is also supported by funds from the industry and the department (alumni gifts).

Undergraduate awards

- N. Gary Lane Beginning Geologist Award: Kent Griffith
- Professional Development Award: Marcella Yant
- Junior Award: Henry Leitke
- Bill and Jan Cordua Scholarship: Ryan Deasy
- Maynard and Winifred Collier Scholarship: Robert Johnson
- Departmental Citizenship Award: Crystal Hout
- Faculty Scholarship (Senior) Award: Bissett Young

Graduate student awards

- Estwing Award (Hammer) and Outstanding Academic Achievement: Hsiu-Wen Wang
- John and Mary Droste Award for Outstanding Associate Instructor: Emily Gercke and Katarina Topalov

Fellowships

- Chevron Oil Co. Fellowship: Ryan McAleer and Kimberly Shoemaker
- Galloway/Perry/Horowitz Fellowship: Allison Bormet, Sarah Cadieux, and David Riese
- Daniel Tudor Fellowship: Alexander Panessa
- Grassmann Fellowship: Michael Cheshire and Hsiu-Wen Wang
- William D. Thornbury Fellowship: Alexander Riddle
- Cumings/Malott Fellowship: Qian Zhang
- CRES Fellowship: Yanyan Chen and Yifei Liu
- Dissertation Year Fellowship (the College): Rituparna Bose

Research assistantships (faculty advisers)

- Ray Chuang (*Kaj Johnson*)
- Agnieszka Furmann (*Arndt Schimmelmann and Maria Mastalerz*)
- Ling Gao (*Arndt Schimmelmann and Maria Mastalerz*)
- Robin Green (*Claudia Johnson*)
- Adam Johnson (*Lisa Pratt*)
- A. Michelle Lawing (*David Polly*)
- Xiaofei Pu (*James Brophy*)
- Matthew Reeder (*Gregory Olyphant*)
- Eric Stifter (*Edward Ripley*)
- M. Rebecca Stokes (*Robert P. Wintsch*)
- Robert Waddle (*Gregory Olyphant*)
- Ryan Wilson (*Juergen Schieber*)

Associate instructors, spring 2011

- | | |
|----------------------------|-----------------------|
| • Richard Bykowski | • Katie Nold |
| • Humberto Caravajal-Ortiz | • Brooks Proctor |
| • Michael Cheshire | • Polly Root |
| • Kellie Donoghue | • William Simmons |
| • Cindy Elbaz | • Michael Smith |
| • Daniel Fetherston | • M. Rebecca Stokes |
| • Poonam Giri | • Valentina Taranovic |
| • Dalton Hardisty | • Katarina Topalov |
| • Luke Martin | • Hongji Yuan |
| • Gregory Nelson | • Justin Zabrecky |



Other awards

- Phi Beta Kappa: Laurel Bobbitt
- Best Student Poster, NE-SE GSA: Brooks Proctor
- Theodore Roosevelt Memorial Grant for research: Rituparna Bose
- Schucher and Dunbar Grant for research: Rituparna Bose
- Hutton Honors College Research Grant: Elizabeth Reinke
- Lac Courte Oreilles Foundation Research Grant: Elizabeth Reinke
- Burnett/Masters Jr. Scholars Award: Elizabeth Reinke
- Indiana University Incentive Grant: Elizabeth Reinke
- Office for Women's Affairs, Women in Science Program Travel Grant: Sarah Cadieux, Rebecca Stokes, and Hsiu-Wen Wang
- Graduate School Grant-in-Aid of Doctoral Research: Blaire Hensley-Marschand and A. Michelle Lawing
- McCormick Science Grant to faculty-student pair: David Bish and Hongji Yuan
- Villigen Powder School Travel Grant: Hongji Yuan
- AIPEA International Clay Minerals Association Travel Grant: Hongji Yuan
- NSF Student Travel Grant: Kim Shoemaker
- American Society for Mining and Reclamation: Dalton Hardisty
- ACGGP-Ares (Colombia): Humberto Carvajal-Ortiz
- IU Geoscience Crossroads Best Oral Presentation (2011): Sarah Beth Cadieux and Xin Liu
- IU Geoscience Crossroads Best Poster Presentation (2011): Ryan McAleer and Robert Waddle

Peer-reviewed publications by students

Amlan Banerjee and E. Merino (2011), "Terra rossa genesis by replacement of limestone by kaolinite: III. Dynamic quantitative model," *Journal of Geology*, 119, 259-274.

Amlan Banerjee and others (2011), "Deep permeable fault-controlled helium transport and limited mantle flux in two extensional geothermal systems in the Great Basin, United States," *Geology*, 39, 195-198.

Rituparna Bose, C. Schneider, P. D. Polly, and M. M. Yacobucci (2010), "Ecological Interactions Between Rhipidomella (Orthides, Brachiopoda) and its Endoskeletonobionts and Predators in the Middle Devonian Dundee Formation of Ohio, USA," *Palaios*, 25, 196-208.

D. L. Bish and **Hsiu-Wen Wang** (2010), "Phase Transitions in Natural Zeolites and the Importance of PH₂O," *Philosophical Magazine*, 90, 2425-2441, doi: 10.1080/14786430903581288.

Yun-Ruei Chuang and K. M. Johnson (2011), "Reconciling Geologic and Geodetic Model Fault-Slip-Rate Discrepancies in Southern California: Consideration of Non-Steady Mantle Flow and Lower Crustal Fault Creep," *Geology*, in press.

Xin Ding, C. Li, E. M. Ripley, D. Rossell, and S. L. Kamo (2010), "The Eagle and East Eagle Sulfide Ore-bearing Mafic-Ultramafic Intrusions in the Midcontinent Rift System, Upper Michigan: Geochronology and Petrologic Evolution," *Geochemistry, Geophysics, Geosystems* 11, Q03003, doi:10.1029/2009GC002546.

Hui Jin, A. Schimmelmann, Maria Mastalerz, James Pope, and Tim A. Moore (2010), "Coalbed Gas Desorption in Canisters: Consumption of Trapped Atmospheric Oxygen and Implications for Measured Gas Quality," *International Journal of Coal Geology*, 81, 64-72. //http://dx.doi.org/10.1016/j.coal.2009.10.010

Chinaemerem O. Kanu, and K. M. Johnson (2011), "Arrest and Recovery of Frictional Creep on the Southern Hayward Fault Triggered by the 1989 Loma Prieta, California, Earthquake

and Implications for Future Earthquakes," *J. Geophys. Res.*, doi: 10.1029/2010JB007927, in press.

Michelle Lawing and P. D. Polly (2010), "Geometric Morphometrics: Recent Applications to the Study of Evolution and Development," *Journal of Zoology*, 280: 1-7.

Yifei (Faye) Liu, C. McKnight-Whitford, Y. Xia, F. Wu, E. Elswick, C. C. Johnson, C. Zhu (2010), "Antimony Speciation and Contamination of Waters in Xikuangshan Sb Mining and Smelting Area, China," *Environmental Geochemistry and Health*, doi: 10.1007/s10653-010-9284-z.

Yifei (Faye) Liu, **Peng Lu**, C. Zhu, and Y. Xiao (2010), "Coupled Reactive Transport Modeling of CO₂ Sequestration in the Mt. Simon Sandstone Formation, Midwest U.S.A.," *The International Journal of Greenhouse Gas Control*, 5, 294-307. DOI: 10.1016/j.ijggc.2010.08.008.

Peng Lu, Q. Fu, W. E. Seyfried Jr., A. G. Hereford, C. Zhu (2010), "Navajo Sandstone-Brine-CO₂ Interaction; Implications for Geological Carbon Sequestration," *Environmental Earth Sciences*, doi:10.1007/s12665-010-0501-y.

J. M. Meik, **A. Michelle Lawing**, and A. Pires-daSilva (2010), "Phenotypic Evolution in Insular Speckled Rattlesnakes," (*Viperidae: Crotalus Mitchellii*). *Plos ONE* 5:e9524.

Peng Lu and C. Zhu (2010), "Arsenic Eh-pH Diagrams at 25°C and 1 Bar," *Environmental Earth Sciences*, p.1-11. doi: 10.1007/s12665-010-0652-x.

K. McWilliams, G. J. Walsh, and R. P. Wintsch (2010), "Silurian-Devonian Age and Tectonic Setting of the Connecticut Valley-Gaspé Trough in Vermont Based on U-Pb SHRIMP Analyses of Detrital Zircons," *Am J. Sci.*, 310: 325-363. doi: 10.2475/05.2010.01

Kevin Robertson and D. L. Bish (2010), "Determination of the Crystal Structure of Magnesium Perchlorate Hydrates by X-ray Powder Diffraction and the Charge-flipping Method," *Acta Crystallographica, B: Structural Science*, 66, 579-584.

Hsiu-Wen Wang, D. L. Bish, and H. Ma (2010), "PH₂O-dependent Structural Phase Transitions in the Zeolite Mesolite: Real- and Reciprocal-Space Crystal Structure Refinements," *American Mineralogist*, 95, 686-698.

Hsiu-Wen Wang and D. L. Bish (2010), "X-ray Diffraction Study of the Zeolite Natrolite: T-PH₂O Phase Diagram Phase Transitions During Dehydration/Rehydration," *Eur. J. Mineral.*, 22, 271-284.

Hongji Yuan and D. L. Bish (2010), "NEWMOD+, a New Version of the NEWMOD Program for Interpreting X-ray Powder Diffraction Patterns from Interstratified Clay Minerals," *Clays and Clay Minerals*, 58, 318-326.

Hongji Yuan and D. L. Bish (2010), "Automated Fitting of X-ray Powder Diffraction Patterns from Interstratified Phyllosilicates," *Clays and Clay Minerals*, 58, 727-742.

Congratulations to our 2010 graduates!

BS/BA

- Mustafa Albuqshi, BS
- Adam Baker, BA
- Laurel Bobbitt, BA
- Theresa Cook, BA
- Marcus Degen, BA
- Kellie Donoghue, BS
- Robert Johnson, BS
- Tiffany Proffitt, BS
- Evan Wade, BA
- Bissett Young, BS

MS/PhD

- Xin Ding, PhD
- Martha L. Growdon, PhD
- Chinaemerem O. Kanu, MS
- Tingting Liu, MS
- Peng Lu, PhD
- Yifei (Faye) Lu, MS
- Kathryn D. Nold, MS
- Stephaney S. Puchalski, PhD

Alumni Notebook

1950s

Rosalind Robinson Modlin, BA'50, writes that she is enjoying "happy old age" and is in fairly good health. She adds, "I would love to know if any of my classmates are living." Modlin lives in Alexandria, Va.

Craig Hatfield, BS'51, MA'61, PhD'64, and his wife, Nancy, MA'63, purchased a farm and built a retirement home and barn in Addison, Mich., and are enjoying wildlife of the area. Shortly before Christmas 2010, Craig had a fall that resulted in a broken leg. Craig and Nancy's son, Andy, BA'96, recently spent six months in the Philippines as a volunteer in Doctors Without Borders. Their other son, Adrian, exhibited his artistry at a 2010 art show at Wayne State University. Their daughter, April, and her husband, Jon, have two adopted children, Ella and Cole.

James A. Smith, BA'55, writes that he is enjoying retirement. He works out three times a week, plays competition racquetball, and is an active member of the Utah Geological Survey. Smith lives in Littleton, Colo.

Jack W. Baker, BS'58, retired in 2001 at the age of 65 after working as an environmental program specialist with the State of Arizona for 16 years. He lives in Tempe, Ariz.

David L. Mathews, BS'59, MA'60, is a retired geophysicist who lives in Palmer, Alaska, with his wife, Betty.

Don Wirth, BS'59, continues his active lifestyle — a trip to Thailand in January 2009; numerous days of skiing; leading an eighth-grade class from Billings, Mont., to the Oregon coast; several canoe trips on the Yellowstone and Tongue rivers; golfing; and bicycle rides down three of the steepest highways in Montana. Wirth also spent several weeks working on trails, riding a skidsteer, cutting Russian olive trees, building benches, and performing general forest maintenance. He says that he has cut, split, and stocked enough firewood to last two to three more years! (Don was just as energetic when he served as Don Hattin's field assistant during the summer of 1957.)

1960s

Gerald Johnson, BS'60, MA'62, PhD'65, and his wife, Marilyn, MS'63, continue their energetic lifestyle, with participation in a marine science program, camping and hiking in the Blue Ridge Mountains, and touring India, where they visited the Taj Mahal and rode on camels and an elephant. Gerald has completed work on an outdoor water feature for their Williamsburg,

Va., home; participates in environmental activities, gives lectures, and leads field trips. Marilyn continues work as a site coordinator with the William and Mary Elderhostel program and Citizens for Education group whose goal is to find ways to reduce the number of high school drop-outs.

Their daughter, Jeannine, continues to work with the State Department mission to the European Union. Son David works in the golf course design industry. Son Mark has completed another eBook, this time focusing on high dynamic range (HDR) photography.

Roger Cuffey, BA'61, MA'65, PhD'66, now retired from the Department of Geosciences at Penn State University, has had a busy year continuing to clear out the department's fossil storage room in the Deike Hall, thus rescuing his type and figured specimen, with travel to Egypt, Israel, Maine (NE GSA), and Mississippi. He is writing a general article on bryozoa of modern coral reefs for the new Springer Encyclopedia and an article on the oldest known bryozoan-built reefs (central China, early Ordovician). Both of Cuffey's sons are geologists: Cliff is a Chevron petroleum geologist, and Kurt is a geomorphologist/glacial geologist at the University of California at Berkeley.

Michael Mound, MA'61, PhD'63, sent the following summary of his busy career during the past two years: "I did win the best paper award for my summary of the invention I patented for a device that uses nothing but confocal white light for infrared radiation excitation of bulk minerals two years ago. This honor was capped with a meeting with the CEO of ABB, the company I had been working

with in manufacturing since 2001. I left ABB in mid-2009 to start my own company and have been made sales and marketing manager for FCT-ACTech of Adelaide, Australia. I also do some work training process technologies for ABB in Baden-Daettwil as well as translations from German to English for the Technische Hochschule in Baden, Switzerland. I have served on the Advisory Board for the IU Geological Sciences Department and was elected president for 2010–11. In 2008, I met my old friend and a student that I tutored in geology when an undergraduate at CCNY, former U.S. Secretary of State and former general of the U.S. Army Colin Powell (who never did take my advice to quit the military that was occupying his mind when we were students together instead of following a course of graduate study in geology). My most recent accomplishment was to survive the massive 8.8 earthquake in Chile of Feb. 27, 2010. To be fair, it was only a 7.0 event in Santiago, where I was staying when this happened."

Ronald J. Walton, BS'61, was recently elected director of the District 9 Edwards Aquifer Authority. Located on the eastern edge of Edwards Plateau in Texas, the Edwards Aquifer discharges about 900,000 acre feet of water a year and serves about 2 million people. The Edwards Aquifer is also home to several unique and endangered species. Walton worked as a geologist for 34 years with the federal government and now sells real estate for Randall Morris & Associates in New Braunfels, Texas, where he lives. He writes that he plans to attend his 50-year class reunion at IU in June.

Lawrence H. Balthasar, MA'63, PhD'69, reports that he and his wife, Susan, traveled and hiked extensively in the western United States during 2009 and that he suffers lingering effects of a bicycle accident. Larry continues his involvement in the parish life of Mission San Luis Obispo, including outside projects such as developing a memorial garden. In October he will join a Franciscan group for a trip to Rome and Assisi. Susan is an organist at a Lutheran church and has a heavy involvement with motorcycles, having ridden one of her machines at last year's speed trials at Bonneville Salt Flats! The Balthasars are now ardent fans of the Giants baseball team, and Larry plans to spend a spring training marathon with the team in Arizona. The Balthasars enjoyed





The Hendrix Brigade of 1964

Please help us identify those not named in the picture. We will send you — upon request to GeoChair@indiana.edu — as an attachment to an e-mail, an enlarged image if that would help you put names to faces.

Bill Hanna, BS'60, MA'62, PhD'65, sent this photograph with a note saying that during the field trip, **Tom Hendrix** arranged free housing for the students “in a Wisconsin jail.”

two trips to New Mexico. Their younger son received his PhD degree and is now in a tenure-track position in the English Department at IU South Bend.

Paul Basan BA'65, formerly manager-petrophysics for RPS Energy, Aberdeen, U.K., is now technical director at Corex U.K., England.

Since stepping down as chairman of the Department of Earth Sciences at Tennessee Tech in Cookeville, Tenn., **Larry Knox**, BA'65, MA'71, PhD'74, has returned to full-time teaching. He continues his research in Midcontinent Ostracoda and Waulsortian mounds of Tennessee. Recently, he spent a week along the Amazon River rainforest of Peru and a week in Cuzco, the Sacred Valley, and Machu Picchu. Last year, Larry and Carol, BA'66, undertook a long road trip, visiting many national and state parks in the western United States. Larry “would love to hear from any who remembers me; I can be reached at lknox@tntech.edu, and I promise to respond to all e-mails!”

Sherman M. Clebnik, MA'67, is a professor emeritus at Eastern Connecticut State University in Willimantic, Conn. He retired in July 2009 from the Department of Environmental Earth Science but still teaches occasional courses as an adjunct. Clebnik lives in Mansfield Center, Conn.

Don Kissling, PhD'67, reports that he and his family are all in good health and spirits, with everyone active either in teaching or in college. During the spring

of 2009, Kissling completed work on three Cretaceous deep wells of the Bahamas. He now spends most of his spare time on corals of the Florida reef tract and continues his avid hobby of fishing.

1970s

Steve Henderson, BS'70, MA'79, reports that he has completed his four-year term as chairman of the Division of Math and Science at Oxford College of Emory University. In June 2009, he and his wife, Kitty, also a geologist, traveled to Vienna, Austria, to attend a military geology and geography conference, and followed up with a few days in Budapest, Hungary. During the summer of 2009, Henderson and one of his Oxford College colleagues led a student group to Great Britain to teach a course on Scottish geology and culture. The Hendersons' daughter, Sarah, a junior at Oxford College, was a participant in this venture. During July 2009, Steve, Kitty, and Sarah flew to Seattle, and while Kitty vacationed with friends Steve and Sarah linked up with IU alumnus **Michael M. Hamilton**, BS'69, MA'75, and his wife in Spokane, Wash.; the foursome traveled to Butte, Mont., to visit IU alumnus **Richard I. Gibson**, BS'71, and continued south for a visit to Yellowstone National Park.

William W. O'Leary, MAT'70, is retired and now runs O'Leary Forests in Rockford, Ill. O'Leary Forests is 16 acres dedicated to Illinois Department of Natural Resources forestry. O'Leary also writes occasional articles on wildlife — deer, foxes, and wolves — for local newspapers. He and his wife, **Nancy (Champerlin)**, MAT'65, live in Rockford.

Gregory P. Wahlman, BA'72, MA'74, is now a consulting carbonate sedimentologist-biostratigrapher with his own firm, Wahlman Geological Services, in Houston. Previously, he was a carbonate sedimentologist with BP America in Houston.

Stuart Hirsch, MA'75, is now a consulting geologist at Stuart Hirsch CPT, PG. Previously, he was senior geologist with the eastern division of Chesapeake Energy and prior to that was senior geologist at Cabot Oil and Gas.

1980s

Jayne Sieverding, MS'81, continues her work with Chevron in Houston and has recently moved to a new job as reservoir characterization manager. She is the incoming president of our Advisory Board. Her husband, Peter, who also works for Chevron, has moved into a new position doing “upstream workflow optimization engineering.” He ran the 2010 Boston Marathon in three hours and 23 minutes! Their daughter, Johanna, is a senior in high school and is preparing for college, where she wishes to enter an engineering program. Son Eric is a freshman in high school, where he is on the tennis team and plays club soccer.

Jim Kwolek, MS'85, reports that his 50-year milestone has finally got him to stop running in place. He continues his long career with ExxonMobil, especially involving well planning in the Piceance Basin. His group is working on tight sands of the Cretaceous Mesa Verde. Kwolek is also involved with regulatory issues concerned with drilling on BLM land. He has joined the Houston Gem and Mineral Club, which has kept him busy along with

(continued on page 24)

Alumni notebook

(continued from page 23)

hiking and running; he ran his first half-marathon in January 2010 and is happy with the results. Kwolek is an inveterate world traveler — he visited Prague late in 2009 and planned to visit Budapest in April of this year.

Bill Nellist, MS'86, continues his work with the Defense Mapping Agency. He is striving to meet five-year production goals and has made work-related trips to Charleston, S.C., and Pascagoula, Miss. He continues his passion for landscape gardening. He and his wife, Catherine, have a daughter, Fiona, who is now in second grade; she is a busy member of a Brownie troop and an enthusiastic swimmer.

Andy Trowbridge, BS'86, suffered an ACL tear while trying a back flip while wake boarding last summer and had corrective surgery during fall 2010. His son, Jacob, has graduated from Ball State University with a degree in public relations. His younger son, Zack, is a cross-country runner at North Central High School in Indianapolis.

Signe Wurstner BS'86, MS'89, was married to Mark White. She continues her work as senior research scientist at Pacific Northwest National Laboratory.

Ross Vandrey, BS'89, has returned to the United States after a seven-and-a-half-year assignment in Norway with Shell. His work there ended on a high note — the project he has worked on for several years was finally drilled, and it proved to be a big gas discovery. Vandrey is now working on prospects in the Gulf of Mexico. His wife, Gemini, an enthusiastic roller-blader, has been busy decorating their new home in Katy, Texas, and is looking forward to returning to a nursing career. The Vandreys have four children: Brienne, who is attending the University of St. Andrews in Scotland; Nicholas, a high school junior in Seven Lakes High School; Ryan, a freshman in Seven Lakes High School; and Damon, a sixth-grader at Wood Creek Junior High.

1990s

Chris Gellasch, MS'94, reports that he started his U.S. Army-funded PhD at the University of Wisconsin–Madison and was promoted to lieutenant colonel in October 2009. He gave a presentation in October at GSA in Portland on Afghanistan's hydrogeology and then in November gave a presentation at a military hydrogeology conference in London on U.S. military hydrogeology over the past 100 years. Both presentations have been turned into papers

Tenaya Hurst's one-woman musical shows drum up audiences' interest in geology

Tenaya I. Hurst, BA'05, has been busy since graduating from IU with degrees in anthropology, geology, and theatre and drama. She writes, "I traveled in Europe for a year-and-a-half, exploring Roman ruins in Italy and Sicily, and visiting any major geological site, national park, and outcrop I could find! My three areas of study came together when I visited the awe-inspiring site of Tivoli, Sicily. [There were] archaeological remains of a theatre, made from volcanic stone, with a view of Mount Etna through the now crumbled proscenium. I [have also] self-produced and performed my one-woman show, *You Betta Belize It!*, a cabaret about love and archaeology. I wrote this show about my experience with the IU field school in Crooked Tree, Belize, with Anne Pyburn at Chau Hiix. It was an amazing experience that I cherished, excavating Mayan remains, finding pottery, bone, jade, conch shells, turtle shells, chert arrowheads, obsidian blades, and living in the jungle!

"I self-produced and performed in my one woman show, *Tenaya Rocks! A Sexy Geological Cabaret*. This production entertains and educates adults about the basics of geology. I sing about 10 songs, all with lyrics that I've changed to be about rocks, explaining geologic processes, and describing my time at IU at field camp, and other geology field trips. I've made the show accessible to an audience that doesn't know that much about geology, wants to learn more about geology, and those who know quite a lot get all the little references and rock puns I've made! I invited students from all the major university programs in geology, and I know they enjoyed it the most! It's a fun show that I have adapted to several venues and events. I prefer to perform it with two or three male performers too, — my "cabaret boys" — but I am also able to perform it as a true one-woman show (but it's better with the boys!).

"Occasionally, I am invited to elementary schools to give an hour special on geology as well. I explain the theory of plate tectonics and how all the evidence leads to a theory that unites the understanding of our Earth with one concept. The rock cycle is important for the kids to know for state testing, so we definitely cover that. The hardness test is also on their state tests, so I go into mineralogy and explain Moh's scale while singing 'Diamonds are on Moh's Top Ten.' So, I am bringing geology to a variety of audiences, in their respective appropriate ways! I also have a rock cart with plenty of samples that the kids get to look at and touch and point out things. It's really very exciting for them!

"My goal [is] to perform some of my cabaret for an audience at the December AGU meeting in San Francisco. I have attempted to contact the persons in charge of the meeting, but I'm not sure if they would think my show entirely appropriate since the goal of the meeting is to share important information and [provide] summaries of people's studies that they've been working on for years. I just want to entertain! So, if I am able, this December, I'll promote my show at the Moscone Center [in San Francisco] and hopefully I can get some geologists to come out for a drink and a cabaret at a local venue!"

Hurst lives in San Jose, Calif.

that will be published in a GSA Special Paper and Geological Society of London Special Publication, respectively. Gellasch is to begin field work on his dissertation research to determine groundwater pathways that viruses utilize to travel between the Madison sanitary sewer and the municipal water wells.

Bill Elliot, MS'98, PhD'02, has assumed chairmanship of the Geology and Physics Department at the University of Southern Indiana. Previously, Elliot was geology coordinator and associate professor at Southern Oregon University, in Ashland, Ore.

2000s

Carrie Nolan Harrington, MS'00, moved to Denver in 2009 to pursue a career at Shell Oil Co. after working for Exxon Mobil Corp. in Houston for almost 10 years. She writes, "I am working as a production geologist for Shell on a gas field in Wyoming. I love living in Denver as it lends itself to many weekends of hiking, camping, and skiing."

Ralph Milliken, BS'01, received his PhD in 2006 from Brown University before heading to Caltech/JPL as a post-doctoral researcher. He was then hired as

(continued on page 25)

Alumni notebook

(continued from page 24)

a research scientist at JPL with a joint appointment as a visiting associate at Caltech. Milliken has been working on stratigraphy and remote sensing of Mars, helping to analyze potential landing sites for the 2011 Mars rover, and studying the composition of meteorites and the lunar surface. His daughter Violet was born in 2009, and in the spring of 2010 he and his family returned to his hometown of South Bend, Ind., where he joined the faculty at the University of Notre Dame as an assistant professor.

Matthew Campbell, PhD'04, taught for two years as a visiting professor in the Department of Biology at Wheaton College and taught a summer field geology course at Wheaton College Science Station in the Black Hills of South Dakota. He now has a tenure-track position teaching biology, geology, and environmental science at Judson University in Elgin, Ill.

Prasenjit Roy, MS'06, and **Sohini Sur**, MS'04, are doing fine in Houston. They have now spent about two years in their house in Katy, Texas, but still have many unfinished jobs. Roy is about to complete his five years with Chevron and Sur is completing her second with Shell.

Remus Lazar, PhD'07, was featured in a June 2008 issue of the AAPG Explorer, wherein he is shown shaking hands with American Association of Petroleum Geologists Executive Director Rick Fritz. Lazar had just won a brand-new Jeep in the annual meeting's inaugural "Search the Floor" contest. Lazar, who works as a senior research geologist with ExxonMobil in Houston, remarked that the Jeep would be a gift for his wife, **Mirela Dumitrescu**, PhD'06.

Joyasish Thakurta, PhD'08, spent time as an exploration geologist with Freeport McMoRan Copper and Gold in Arizona before joining Ohio University at Athens as a visiting assistant professor of economic geology. He and his wife, Amrita, are proud parents of daughter Ishani.



ALUMNI ASSOCIATION
CONNECTING ALUMNI. SERVING IU.

Advisory Board activities

Through thick and thin, rise and fall, transition and stability, our Advisory Board — constituted from a group of dedicated alumni and friends — has donated freely and generously the members' time, expertise, and guidance with mirth and firmness to sustain the Department of Geological Sciences, meeting annually in Bloomington and elsewhere as well. To all, we are deeply indebted.

2007 Advisory Board



Sitting: Jeffrey Oslund, Katherine Freeman, Donna Hackney, Simon Brassell, and John Steinmetz. Standing: Frank Pruett, John Bubb, Derek Fullerton, Mark Leonard, and Robert Jones. (Glenn Hieshima, president, had to cancel attendance at the last minute.)

2008 Advisory Board



Sitting: Simon Brassell, Katherine Freeman, Donna Hackney, Craig Davis, and Frank Pruett. Standing: Jeffrey Oslund, Derek Fullerton, John Bubb, Mark Leonard (president), Michael Mound, John Steinmetz, and Robert Jones.

(continued on page 27)

In memoriam

Noel Calvin Krothe

Noel Calvin Krothe, 72, died at Bloomington Hospital on Friday, Oct. 8, after a brief illness. He was surrounded by his family at the time of his death. He was born on May 22, 1938, in Shickshinny, Pa., which means “five mountains.” The mountains and nearby Susquehanna River were a playground for Krothe and his five siblings and served as the foundation of his love for the outdoors. He graduated from Bloomsburg State College, Pa., with a BS degree in 1961. He received an MAT through a National Science Foundation Fellowship for Earth Science Teachers from Indiana University in 1968. Krothe taught earth science in the public school system in Baltimore, Md., before completing his education at Pennsylvania State University, where he received an MS degree in 1973 and his PhD in 1976, both in geology.

Krothe began his collegiate teaching career at Indiana University in 1976, retiring in 2003 as professor emeritus. His research and teaching focused on karst hydrogeology and geochemistry. During his tenure Krothe served as an advisor to 52 MS and 12 PhD students. He authored 75 published papers and 125 abstracts. He served as vice president of the Indiana Water Resources Association in 1983 and president in 1984. Krothe received the Sagamore of the Wabash award from then Gov. Frank O’Bannon on the occasion of his retirement. After retiring from the university, he founded Hydrogeology Inc., an environmental consulting firm, with his son Jason. During his career at IU, Krothe took three sabbatical leaves internationally. The first to the University of Rome in 1984, the second was a speaking tour throughout China in 1992, and the last at the University of Auckland, New Zealand in 2000. Krothe’s expertise in karst hydrogeology took him to many other international destinations, including: Australia, the Bahamas, the Czech Republic, Germany, Great Britain, Italy, Japan, Mexico, Russia, Scotland, and Slovenia.

Krothe was a diehard Indiana basketball and Penn State football fan. He loved the outdoors and enjoyed fishing in destinations throughout the world over the course of his life. Krothe loved travel with friends and family and visited nearly every state in the U.S. and many other foreign countries.

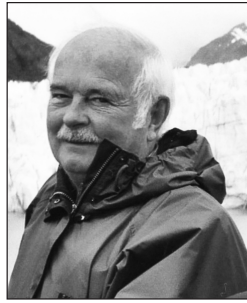
Krothe’s life was grounded in his love for his family. He enjoyed nothing more than time spent with his wife, children, and grandchildren at home in Indiana, at the beach in Sandestin, Fla., and in the mountains of Colorado. Krothe leaves behind his wife of 42 years **Joyce**, (professor of nursing); his children Kara of Bloomington, Joseph (Heidi) of Houston, and Jason (Kandi) of Bloomington. He also leaves behind his grandchildren Carly, Calvin, and Carter Krothe of Houston.

Judson Mead

Professor **Judson Mead**, age 93, of Bloomington, died Sunday, Oct. 10, 2010, at the Meadowood Health Pavilion, Bloomington. Sadly, Jane, his wife of 66 years, followed his passing on Nov. 11, 2010, also at the Meadowood facility.

Mead was born Sept. 16, 1917, in Madison, Wisc., to Warren J. and Bertha (Taylor) Mead. He attended public schools in Madison and the Hill School in Pennsylvania. In his youth, he was a competitive sailor and an avid radio amateur. He graduated from the Massachusetts Institute of Technology in 1940.

During World War II, he was a member of a research team that developed airborne electronic submarine detection equipment, flying many experimental missions in U.S. Navy blimps and PBYS



Noel Calvin Krothe

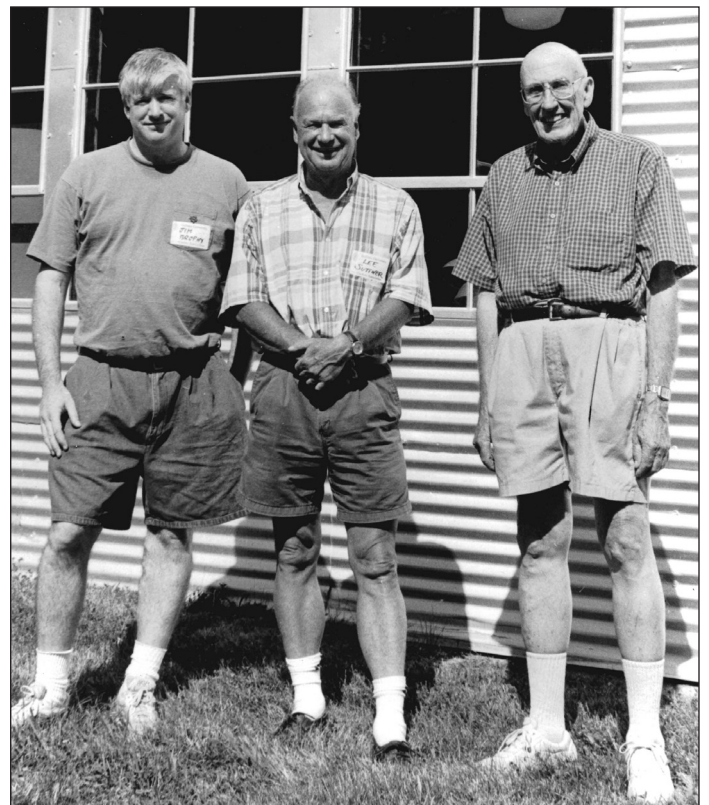
(flying boats). He returned to MIT and graduate school after the war, earning his PhD in geophysics in 1949. That same year he joined the faculty of the Indiana University Department of Geology (now Geological Sciences), where he taught geophysics until his retirement in 1983.

He also served as the director of the Indiana University Geologic Field Station in Montana from 1960 to 1980, building the nation’s premier geologic field teaching program. In 1999, the university renamed the facility the Judson Mead Geologic Field Station in recognition of his leadership. In 1979, he received the National Association of Geology Teachers’ Neil A. Miner Award in recognition of his superior teaching and contributions to geosciences education.

After retiring, Professor Mead continued to serve the Department of Geological Sciences as a member of its Advisory Board. The Judson Mead Professorship in Geophysics was established in his honor by the department in 1999.

He was preceded in death by his brothers, Warren and Jeremiah. He is survived by three sons, Judson, of Buffalo, N.Y., Thomas, of Orinda, Calif., and John, of Carbondale, Ill.; and five grandchildren, Suzanne, Thomas, Andrew, Christopher, and Carolyn.

On Dec. 11 more than 90 people joined in a celebration of the Meads’ remarkable lives in the Tudor Room of the Indiana Memorial Union. Each of the Mead sons talked of the Mead family history, their memories of growing up in the university community, time spent at the Field Station, and their father’s professional career. Professor Emeritus Al Rudman, Mead’s first PhD student and then faculty colleague for nearly 40 years, reflected on his teaching and interaction with students on the Bloomington campus. John Sexton, PhD’74, professor of geophysics at Southern Illinois University, spoke on behalf of Mead’s former students, and Lee and Ginny Suttner talked about their long and close professional and personal relationships with the Meads that evolved over the 20 summers they shared at the Field Station.



From right, Judson Mead with his successors, Lee J. Suttner and James Brophy, at the Field Station.

Geosciences Library

With the closure of the Geography and Map Library in December 2009 and the transfer of its holdings to the Geology Library, the latter officially became the Geosciences Library. While more than 80 percent of current journal receipts are now electronic, the library still provides an ideal environment for study and research.



The entrance, as it looks today.



The "look" of the stacks and study-desks on the south side of the library has not changed. But please come and visit the reading area in north side of the library, which has changed radically.



The north side now.

Membership matters

Join or renew today!

Your IU Alumni Association membership matters!

Your membership dues support Indiana University through programs that provide scholarships, Commencement ceremonies, student recruitment efforts, and student leadership programs. Your membership also supports programs and services for alumni.

Members receive valuable benefits, including:

- Subscription to the *Indiana Alumni Magazine*
- Online alumni services — alumni directory, career center, and more
- IU alumni chapter network
- Membership in your school and/or campus alumni association
- Lifelong connection to IU

• (800) 824-3044

• iuaamemb@indiana.edu

• www.alumni.indiana.edu



ALUMNI ASSOCIATION
CONNECTING ALUMNI. SERVING IU.

2009 Advisory Board



Sitting: Jeffrey Oslund, Donna Hackney, Frank Pruett, and Craig Davis. Standing: Robert Jones (president), John Bubb, Mark Leonard, Jayne Sieverding, Michael Mound, Michael Hamburger, Derek Fullerton, John Steinmetz, and Stephen Wells.

2010 Advisory Board



Sitting: John Bubb, Mark Leonard, Tom Skirvin, John Steinmetz, Jayne Sieverding, and Michael Mound (president). Standing: Craig Davis, Simon Brassell, Jeffrey Oslund, Stephen Wells, Thomas Straw, and Donna Hackney. (Not pictured but also in attendance: Robert Jones.)

Honor Roll of Donors 2008–present

Many thanks to those who have contributed to the IU Department of Geological Sciences!

Corporate Donors

Albemarle Corp.
American Endowment
Foundation
Anadarko Petroleum Corp.
Association of Community
Health Nursing Educators
BASF Corp.
Bechtel Group Foundation
BG Enterprises
BHP Billiton Petroleum
(Americas) Inc.
BP Fabric of America Fund
BP Foundation Inc.
Calyx Energy LLC
Chevron Corp.
Compass Holdings
ConocoPhillips Co.
El Paso Corp.
Eli Lilly & Co.
EQT Corp.
ExxonMobil Corp.
ExxonMobil Foundation
Fannie Mae Foundation
Grand Impression LLC
Halliburton Foundation Inc.
Hamilton Geological
Consultancy LLC
J D Lazor Enterprises Inc.
Kennecott Exploration Co.
Kinder Morgan Foundation
Lane Geographics LLC
Lankard Materials
Laboratory Inc.
Mariner Energy Inc.
Montgomery Environmental
Inc.
PJM Interconnection LLC
Retsch Inc.
Science Applications
International Corp.
Shell Oil Co. Foundation
South River Investments Inc.
Union Foundation

Individual Donors

Acton, Gary
Adams, Richard and Marsha
Adkins, Keith
Alexander, Jeannie
Alexander, Judith
Ali, Khadim and Elizabeth
Allen, Harry and Deborah
Anderson, Garry and Janice
Ardell, Robert and Lee
Austin, David and Joan
Babb, M.

Bahr, John and Susan
Baker, Jack and Carolyn
Baker, Jacob and Peggy
Baker, Kate
Balthasar, Lawrence
Barbour, Robert and Evelyn
Basch, Mark and Tamra
Basu, Abhijit and Ilora
Bear, Glenn and Lorie
Beck, Lois Arlene
Beckman, Richard
Belak, Ronald
Belth, Jeffrey and Sandra
Belth, Joseph and Marjorie
Benham, Steven
Benson, Geraldine
Bish, David and Karen
Bishop, Richard
Blakely, Robert and Rosanna
Boice, Anand
Bollenbacher, John and Martha

Burton, Jerry and Sarah
Cadwell, Stan and Melody
Holm
Callis, Joseph and Anne
Canepa, Alfred
Carlson, Christopher and
Martha Anderson
Carpenter, Gerald
Carpenter, Michael and Cheryl
Carson, Daniel and Frances
Carter, James and Janet
Carter, Pamela
Cassie, Robert
Catt, Larry and Susan
Chase, Daniel and Anna
Childers, Ronald and Judy
Christensen, Carl
Christensen, Evert and Suzanne
Christiansen, Jack and Darleen
Chu, Tsuchu
Clebnik, Sherman

Daniel, Diane
Darko, David and Jill
Davenport, John and Barbara
Davis, Craig and Paula
Dean, Lyndon and Mildred
Decker, Chuck and Kim
Degenstein, Joel and Rachel
Delph, Bryan and Melanie
Derner, George and Carol
Des Marais, David and Shirley
DeSantis, Erica
Dietz, Gerald
Dixon, Joseph and Janice
Dixon, William and Phyllis
Dodd, James and Margaret
Dollar, Nancy
Domagalski, Joseph and
Barbara Beeman
Donelson, Bernadine
Droste, John and Mary
Duc, Aileen
Duigon, Mark
Dumitrescu, Mirela
Duncan, Mack and Julie
Durbin, James
Dutta, Prodip and Gouri
Earle, Ralph
Edwards, Charles and Linnie
Egan, Roger
Elliott, William
Emerick, Phyllis
Engle, Glenn
Faber, James and Margarete
Fairman, Randall and Korryn
Farley, Martin
Farnsworth, James and Diane
Feldman, Howard
Ferguson, James and Joan
Ferrence, Gary and Carol
Ferry, James and Jean
Fertal, Thomas
Fetter, Charles and Nancy
Filippini, Mark
Flandro, Martha
Fleig, Jane
Ford, Constance
Fort, Chris and Isabelle
Foster, David and Marsha
Fox, Mary
Fritz, Arthur and Lois
Frugoni, James
Fry, Geneva
Fullerton, Derek and Hilda
Garihan, John
Gellasch, Christopher and Amy
George, Robert and Barbara
Gerdenich, Michael and Ina
Gest, Howard and Virginia



Bomberger, Harvey
Bork, Kennard and Katherine
Bottum, Annette
Boyce, Robert and Elizabeth
Brassell, Simon and Trudy
Bratton, Gregory
Brewster, David and Becky
Reimers
Brittain, Alan
Brobst, Donald and Elizabeth
Bromley, Bruce and Linda
Brown, Joshua
Bryant, Napoleon and
Ernestine
Bubb, John and Janet
Budnick West, Dorene
Burrin, Walter and Laura
Wilson

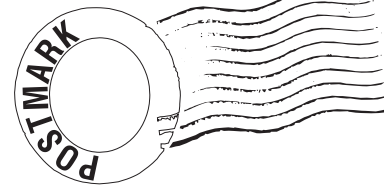
Cleveland, John and Elinor
Cody, Clyde and Elizabeth
Coller, David and Bettye
Coller, Maribeth
Colucci, Anthony and Joy
Cook, Jeffrey and Theresa
Coons, Philip and Elizabeth
Bowman
Cooper, Christa
Cordua, William and Janet
Crane, Barbara
Crane, Ronald
Crayner, Christopher and
Jennifer
Crelling, John and Elizabeth
Crisman, James and Sue
Crisp, Edward
Daniel, David and Nicole

Ghose, Shankar and Geeta
 Gibson, James and Deanna
 Reising
 Giles, Billy
 Girdley, William and B
 Glassman, Scott and Susan
 Goldschmidt, Bruno and
 Eileen
 Goltz, Larry and Eileen
 Gorham, Scott and Susan
 Gosine, Rajindra
 Graham, Michael and Kate
 Grassman, E.J.
 Greeley, David
 Green, Don
 Grender, Gordon and Evelyn
 Griest, Stewart and Risa
 Grover, Monty and Susie
 Growdon, Charles and Marcia
 Guzman, Humberto and Joyce
 Hadley, Ann
 Hager, Jutta
 Hall, Larry
 Hall, Michael
 Hamilton, Michael
 Hamilton, Stanley and Mary
 Handschy, James and Karen
 Hanley, Thomas and Judith
 Hanna, William and N
 Harmon, William and Lynn
 Harper, Roxanne
 Harrington, Carrie

Harste, Jerome and Janice
 Harvey, Richard and Jenny
 Hasenmueller, Walter and
 Nancy
 Hatfield, Craig and Nancy
 Hattin, Donald and Marjorie
 Hattin, Donna
 Hattin, Ronald and Vicki
 Hays, Mary
 Hegarty, William and
 Constance
 Heivilin, F.
 Henderson, Stephen and
 Kathryn
 Hendrix, Thomas and Nina
 Hess, David
 Hieshima, Glenn and Suzanne
 Kairo
 Hinton, Richard and Maryellen
 Hirsch, Stuart and Pamela
 Hoffman, Bradley
 Hokanson, Neil
 Holmes, Keith and Kimberly
 Fisher
 Huffman, Clyde
 Huffman, Samuel
 Hughes, James and Helen
 Hughes, William and Paulette
 Hultberg, Jane
 Hunt, Michael and Darla
 Brown
 Immege, Neal and Inda

We want to hear from you!

Send us your news, and we'll publish it in the next issue of the *Hoosier Geologic Record*. Please take a moment to fill out the class note coupon on page 31. Just drop it in the mail or fax it to us at (812) 855-8266.



Inderwiesen, Philip
 Ingersoll, Gary and Helen
 Ingersoll, Ray
 Jackson, James
 Jackson, Jay and Barbara
 Waugh
 Jacobs, Alan and Luanna
 James, Bruce and Susan
 James, William and Elise Porter
 Janssen, Janelle
 Jenkins, Jerry and Helen
 Johnson, William
 Jones, Henry
 Jones, Robert and Nancy
 Jungemann, Mark and Nancy
 Karasevich, Lawrence and Ellen
 Kauffman, Christina
 Kauffman, Erle and Claudia
 Johnson
 Kayes, Douglas and Karen
 Keller, Lisa
 Keller, Stanley and Teresa
 Kemmerer, Bryan
 Kilsdonk, Bill and Julie
 Kline, Randy and Jennifer
 Kluesner, David and Zaiton
 Klusman, Ronald and Sharon
 Koc, Rasit
 Koch, Ellen
 Koch, Philip
 Komito, Donald and Sandra
 Konikow, Leonard and Phyllis
 Koropchak, John and Diane
 Krebes, Elizabeth
 Krothe, Dale and Ferne
 Krothe, Noel and Joyce
 Kuizon, Lucia
 Kuminecz, Cary
 Kurt, Marjorie
 Kwiecien, Therese
 LaHann, Richard
 Lake, Ellen
 Lane, Mary
 Lane, Michael
 Lane, Phillip
 Latimer, Fred and Dorothy
 Lauer, Joan
 Lazor, John and Barbara
 Lee, Eung and Youmee
 Lee, Sandra

Leibold, Arthur
 Leininger, Steven and Susanne
 Leon, R and Sandy
 Leonard, Mark and Kim
 Leshner, Carl
 Letsinger, Sally
 Li, Chusi
 Lieser, Michael
 Litehiser, Joe
 Louden, Richard and Kristin
 Magley, Herbert
 Malkin, Mark
 Manley, David and Angela
 Manson, Joseph
 Maples, Christopher and Sara
 Mariga, Jeffrey
 Markley, Ted and Valerie
 Marks, Rebecca
 Marksamer, Andee
 Martinson, Shirley
 Mason, Jack
 Mason, Jeffrey and Caren
 Mastalerz, Maria
 Masterson, Wilmer
 Mathews, David and Betty
 Matt, Catherine
 May, Lee and Kim Hughes
 May, Michael and Elizabeth
 Mayfield-Jones, Eleanor
 Mazalan, Paul
 McAtee, Glenn and Marilyn
 McBride, Angela
 McBride, William
 McClellan, Bernard and Mary
 McDevitt, Patrick and Dorothy
 McGee, Michael and Irene
 McGroder, Michael and Leslie
 Sartor
 McLane, Michael
 McLoda, William
 McMichael, Catherine
 McTaggart, Robert and
 Barbara
 Mead, Dorothea
 Mead, John
 Mead, Thomas and Lenore
 Meise, Maxwell and Judith
 Merritt, Andrew and Eleanor
 Miesch, Alfred and Norma
 (continued on page 30)



Donors

(continued from page 29)

Miller, Marvin and Vickie
 Miller, Michael and Anne
 Millholland, Madelyn
 Mohanty, Manoj
 Mongoven, Edward and Judith Schroeder
 Montgomery, Douglas and Martha
 Moore, Donald and Marcia
 Morganwalp, David and Jill
 Motzel, Bryan and Paula
 Mound, Michael and Elizabeth Greene
 Muffler, Steve
 Mulley, Lauri
 Murat, Michael
 Murphy, Janet
 Murphy, Michael
 Murray, Haydn and Juanita
 Murray, Steven and Nancy
 Musser, Kathryn
 Nellist, William and Catherine
 Nells, Richard and Margaret
 Nelson, Jack and Eileen
 Niemann, Samuel and Evelyn
 Noe, Nicholas and Carita
 Noel, John and Julie
 Noone, Gloria
 Norbeck, Carl
 O'Connell, Anne
 Ogle, Ronald
 Oliver, Joseph and Christine McEnery
 Olliver, David
 Olsen, Larry and Mary Anne
 Olyphant, Greg and Cynthia
 Oslund, Jeffrey and Raelene
 Palmer, Arthur and Margaret
 Panno, Samuel and Dorey
 Paparazzo, Henry and Jeanne
 Parizek, Richard and Estelle
 Parrish, Andrew and Marianne
 Parsell, James and Jean
 Patrick, Robert
 Patzkowsky, Mark and Katherine Freeman
 Paulin, Travis and Katherine
 Pavlis, Gary
 Pavlis, Mary
 Percy, Arthur and Sondra
 Pfau, Gerhard and Alica
 Pheifer, Raymond
 Phelps, Tommy and S.M. Pffner
 Pickering, Ranard
 Pinsak, Arthur and Sharon

Pirie, Robert and Deborah
 Ploger, Sheila
 Plymate, Thomas and Lynda
 Portteus, Donald
 Potter, Gary
 Pratt, Alan
 Price, Robert and Mary Runnells
 Pruett, Robert and Diane
 Reazin, David



Reed, Nancy
 Reiss, Kenneth and Coral
 Reitz, Dan
 Renick, Howard
 Renick, Lynda
 Renzetti, Phyllis
 Retherford, Michael and Dana
 Revetta, Frank and Joann
 Reynolds, Bryan
 Reynolds, John and A-Lan
 Reynolds, Merilie
 Richard, Benjamin
 Riddell, Audree
 Riddell, John
 Ridgely, Bradley and Debra
 Riepe, Ronald
 Riggie, Virginia
 Riggs, Kenton and Jane
 Rinehart, Charles and Cheryl Metz
 Ripley, Edward and Kathleen
 Robbins, Eric and Janice
 Robichaud, Charles
 Rodriguez, Joaquin and Patricia
 Rohde, Robert and Madalyn
 Rohr, Steven
 Romey, William and Lucretia
 Roy, Prasenjit
 Rudman, Albert
 Ruff, Jerard and Nancy
 Rupp, Sharon

Saenger, Robert
 Sanislo, Rosanne
 Sardi, Henriette
 Sato, Kazuhiko
 Schafer, John and Marilynn
 Schechter, John and Elizabeth
 Schepper, Gary and Ann
 Schlinsog, Dale
 Schmoll, Aaron and Kirstie Anderson
 Schoephoester, Pete
 Schull, Thomas and Diane
 Schultz, Dale
 Schwartz, Robert
 Scott, Vernon and Dee Anne
 Serne, Dennis
 Shaffer, Nelson and Kathryn
 Sharer, Steve and Beth
 Sharp, John and Carol
 Shorb, William and Lisa
 Shultz, Albert
 Sidner, Bruce
 Siekierski, Jerome
 Sieverding, Jayne
 Sitver, Robin
 Slagel, Matthew
 Smith, Aaron
 Smith, Bruce and Patricia Browne
 Smith, James
 Smith, Martha
 Snedden, John
 Snow, Donald and Phyllis
 Solano-Acosta, Wilfrido and Irene Arango
 Sonntag, Mark and Jean
 Sparks, David and Nancy
 Spencer, Michael and Rhonda
 St Jean, Joseph and Elena
 Stafford, Rodney and Marie
 Sterrett, Robert and Renate
 Stevens, Sarah
 Stewart, Gregory and Kathleen
 Stewart, Michael and Carol
 Stigall, Justin
 Stolarz, Jeffrey
 Stratton, James and Patrice
 Straw, William and Odessa
 Sukup, James and Mary
 Sullivan, James
 Sullivan, Nora
 Sun, Zhenbo
 Suttner, Lee and Virginia
 Swihart, Stephen and Theresa
 Szipkowski, James and Sally
 Tarbuck, Edward
 Taylor, Lawrence and Dawn
 Templeman, G and Lara
 Tewel, Kenneth and Brenda
 Thibault, Catherine
 Thomas, Andrew and Sarah
 Thomas, James

Thornburg, Janet
 Thrasher, Tina
 Tilander, Nathaniel and Janet
 Tillotson, Barbara
 Tipple, Gregory and Joyce Basciano
 Towell, Brian and LaDawn
 Towell, Lindsay
 Townsend, Margaret
 Tudor, Janet
 Turner, Mary
 Turpin, Thomas and Karon
 Utgaard, John and Mary
 Utgard, Russell and Doris
 Vance, Kenneth and Joyce
 Vandrey, Michael and Debra
 Viola, Dorothy
 Wahlman, Gregory and Joan
 Wakeman, James
 Walker, Jerome
 Wang, Margaret
 Warner, Scott and Susan
 Watkins, Robert and Karen
 Weeks-Wulf, Marta
 Weidman, Robert and Eleanor
 Weinberg, Martin and Barbara
 Wells, Stephen and Bethany
 White, David and Alice
 White, James and Sheri
 White, Orvil and Christene
 Whitesides, Dietrich and Caroline
 Wilcer, Bruce
 Wilkinson, Joe
 Willan, Christopher
 Williams, Johnnie
 Williamson, Rebecca
 Winarski, Elizabeth
 Winarski, Erik
 Wines, Shirley
 Winslow, Marcia
 Winsted, Donna
 Wirth, Donald
 Wischmeyer, Michael and Pamela
 Witmer, Kelli
 Wolfe, Ralph
 Wong, Wing-Leung and Anne Cheng
 Woodard, Gerald and Georgia
 Wright, William
 Wurstner, Signe
 Yates, Martin and Diane Vatne
 Yochum, Kelly
 Yoder, Gary and Kathleen
 Yokoyama, Christopher and Sandy
 Young, Steven and Margretta
 Youngflesh, James
 Zaback, Andrew and Doreen
 Zachary, Stephanie
 Zack, Cynthia
 Zelsman, Loren

Geology alumni: What's new with you?

The IU Alumni Association is charged with maintaining records for all IU alumni. Please print as much of the following information as you wish. Its purpose, in addition to providing us with your class note, is to keep IU's alumni records accurate and up to date. To verify and update your information online, visit our online alumni directory at www.alumni.indiana.edu/directory.

Publication carrying this form: **Hoosier Geologic Record** Date _____

Name _____

Preferred name _____

Last name while at IU _____

IU Degree(s)/Yr(s) _____

Univ. ID # or last four digits of Soc. Sec. # _____

Phone _____

Home address _____

City _____ State _____ Zip _____

Business title _____

Company/Institution _____

Business phone _____

Company address _____

City _____ State _____ Zip _____

*E-mail _____

*Home page URL _____

*Please indicate clearly upper and lower case.

Mailing address preference: Home Business

Spouse name _____

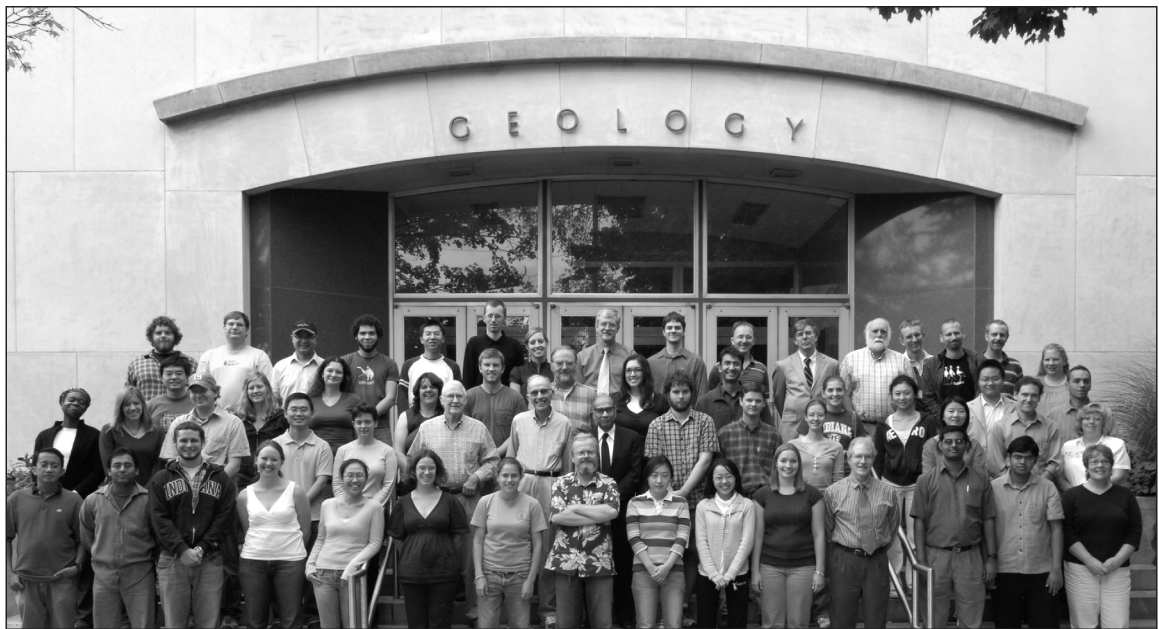
Spouse's last name while at IU _____

Spouse's IU Degree(s)/Yr(s) _____

Your news: _____

Please send information about Indiana Alumni Association membership.

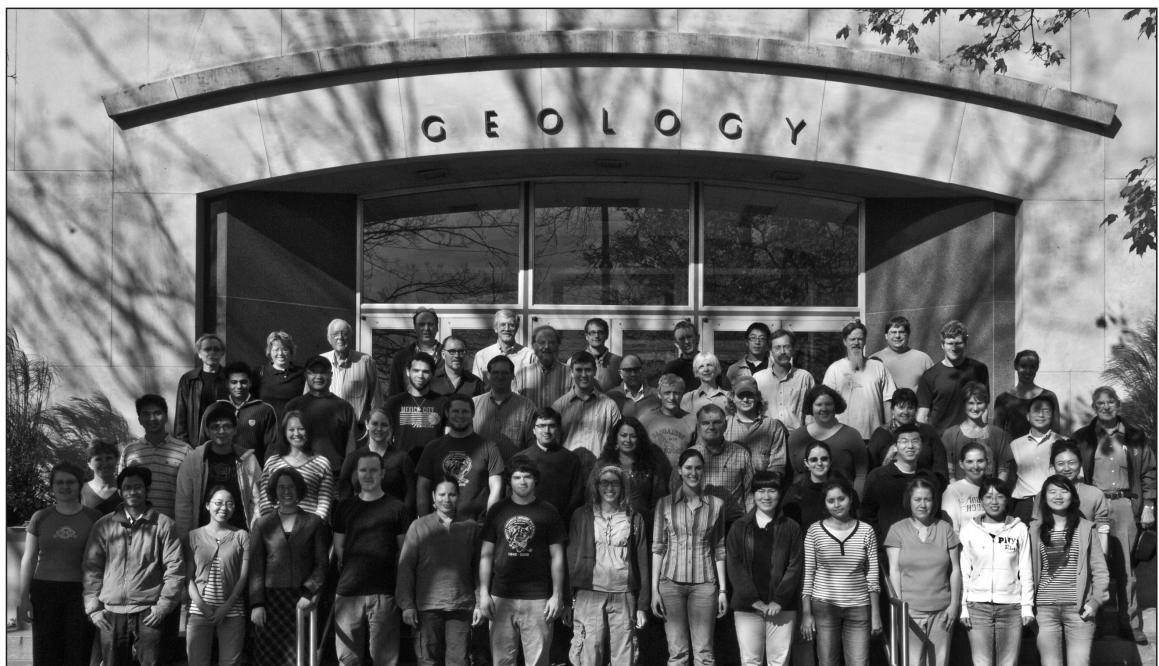
Attach additional pages if necessary. Mail to address on back cover, or fax to (812) 855-8266.



Department of Geological Sciences, fall 2007

Left to right, from bottom

Row 1: Gerald Galgana, Arindam Sarkar, Will Simons, Abbie Enneking, Liming Zhu, Martha Growdon, Laura Jones, Juergen Schieber, Xin Ding, Hsiu-Wen Wang, Laura Podratz, Ed Ripley, Joyashish Thakurta, Shibashis Mookherjee, Donna Hackney
Row 2: Mimi Attenoukon, unidentified, Matt Reeder, Chengbins Yang, Lauren McCollough, Don Hattin, Robert Dodd, Abhijit Basu, Ross Dybvig, Michael Cheshire, Erin Stoez, Yifei Liu, Ling Gao, Michael Hamburger, Deann Reinhart
Row 3: Zupping Zheng, Erin Brenneeman, Alicia Davis, Stephanie Puchalski, Curtis Williams, Bob Wintsch, Serafima Golembo, Trisha Miles
Row 4: Jason Mysinger, Mark Bauer, Hongji Yuan, Michael Smith, Peng Lu, Michael Landes, Rebecca Stokes, David Bish, Cory McWilliams, Peter Sauer, Simon Brassell, Craig Moore, Arndt Schimmelmann, Darius Strapoc, John Bogeman



Department of Geological Sciences, fall 2009

Left to right, from bottom

Row 1: Agnieszka Furmann, Shibaji Chatterjee, Hsiu-Wen Wang, Martha Growdon, Patrick Ducey, Christina Comerford, Alex Gore, Kim Shoemaker, Poonam Giri, Ting Ting, Ritu Bose, Joanna Wall, Yinyan Chen, Ling Gao
Row 2: Maria Mastalerz, unidentified, Ray Chuang, Abbie Enneking, Polly Root, Will Simons, Cristian Medina, Valentina Taranovic, Ken DeHart, Cindy Elbaz, Peng Lu, Michelle Lawing, Yifei Liu
Row 3: Manas Singha, Hongji Yuan, Michael Smith, Walter Gray, Ryan Wilson, Vitaliy Zadoya, Matt Reeder, Lindsay Bugher, Erika Elswick, Claudia Johnson, Chen Zhu, Don Hattin
Row 4: Enrique Merino, Penny Meighen, David Polly, Bob Wintsch, Abhijit Basu, Ruth Droppo, Bruce Douglas, Jeff Frey, Brooks Proctor, Rebecca Stokes
Row 5: Haydn Murray, Kaj Johnson, David Bish, unidentified, Arndt Schimmelmann, Xin Liu, Mark Bauer