

# **GEOSCIENCE NEWS**

*for the Alumni and Friends of the  
Department of Geological Sciences  
University of Michigan, Ann Arbor, Michigan*



**Spring 2003**



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*U-M Professor and noted polar scientist William H. Hobbs (right) with famous polar explorer and geological iconoclast Alfred Wegener, on the street in Berlin in 1928. It is likely that they were sharing ideas of upcoming field work in Greenland. Wegener perished in Greenland in 1930. Hobbs conducted several expeditions in the late 1920s and early 30s.*

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## ***Greetings from the Chair***

It is hard for me to believe, but as I write this letter I have completed nearly three years of my five-year term as the chair of this exceptional department. In my previous editions of “Greetings from the Chair” I described changes in the graduate and postdoctoral programs, new initiatives at Camp Davis, programs initiated to enhance connections with our alumni, new awards to recognize outstanding undergraduate and graduate students, and a long-term plan for expanding research directions in the Geological Sciences at the University of Michigan. Having moved in several new directions during the my term as chair, it is now time to refine these new initiatives, reflect on their consequences, and better integrate them into a smoothly operating department.



The most exciting change in the department over the past year has been the addition of three new tenure-track faculty members—Udo Becker, Todd Ehlers and Ingrid Hendy. Together they represent an enormous influx of new talent, cutting-edge ideas, and youthful enthusiasm that is already beginning to reshape the character of the department. I encourage you to read about their backgrounds and interests in the following pages, and to stop by and say hello to the newest additions to the faculty the next time you are in Ann Arbor or at an alumni reception. As I write this letter we are also in the midst of an additional faculty search in the field of Atmospheric Evolution, which is our first step toward broadening the department into atmospheric and climate studies and developing a full Earth System Science capability, as outlined in my previous letter.

Another notable event in the life of the department this year was the retirement of Chuck Wooden, who served for thirty-one years as the Superintendent of the Camp Davis Geological Field Station in Jackson, Wyoming. Chuck moved out to Camp Davis from Ypsilanti, Michigan in 1972, and lived on the premises where he maintained the camp and raised his family. Over his career Chuck has demonstrated an incredible devotion to Camp Davis and to the generations of students who have had the opportunity to spend time under his watchful eye in the shadow of Cream Puff. Chuck’s retirement was celebrated at a party with faculty in Ann Arbor last Fall. We are delighted that we are able to retain him on a part time basis as consultant and caretaker, and look forward to many more years of his presence in the life of the Camp.

Chuck is a very tough act to follow. Fortunately, we have been able to recruit Chris Malvica, who has the perfect mix of talents and experience to carry on the traditions of excellence at Camp Davis. The Superintendent position was reclassified to Program Coordinator, and we have hired Chris to maintain the facility as well as to manage many other aspects of the program including student recruiting and registration, seasonal hiring, food service management, camp finances, facilities planning and computer systems support. Chris has a remarkable mix of expertise and experience in food service, building contracting, health care and computer repair/networking. He will be splitting his time between Jackson and Ann Arbor, and will thus have a presence on both campuses. Please feel free to contact Chris Malvica or Camp Director Becky Lange if you have any questions about Camp Davis (phone: 734-615-8600, email: [campdavis@umich.edu](mailto:campdavis@umich.edu)).

Sincerely,

Joel D. Blum

Chair



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## ***New Faculty Join the Department***

**Udo Becker** joined the Department in the Fall 2002 as an Associate Professor. His scientific background is in environmental geosciences and solid-state physics from the University of Bayreuth, Germany. He received his PhD from Virginia Tech, working on the surface mineralogy and reactivity of sulfide and oxide surfaces, and in computational mineralogy. He continued this work at the University of Manchester before he became an Assistant Professor in Münster, Germany. There, he branched out into fields such as crystal growth (with emphasis on the role of growth inhibitors and biomineralization), special reaction mechanisms on semiconducting mineral surfaces at the atomic scale, the calculation of the thermodynamics of solid solutions, ordering processes within those using first principles calculations, and environmental mineralogy. His work at the University of Michigan will have two major aspects which are the structural, chemical, and electronic properties of mineral surfaces and computational mineralogy in the broadest sense. Udo's research group is trying to acquire an ultrahigh-vacuum surface instrumentation which encompasses a number of analysis techniques that can be used by different departments such as chemistry, physics, materials science, nuclear engineering, and geology. This way, they hope to promote collaboration between different groups from these departments. The research projects from these different disciplines have many principles in common such that fruitful collaborative projects are expected in basic research as well as in environmental and technically applied projects.



**Todd Ehlers** joined the faculty in January 2003 as an Assistant Professor in the field of Earth's Surface Processes. Todd has a BSc in Geology from Calvin, two MS degrees from the University of Utah - one in geophysics (thermal processes) and the other in geology (sedimentology), and a PhD in geophysics (geodynamics) from the University of Utah. He was a postdoctoral fellow at Caltech prior to joining our faculty. Todd's research interests are in the interactions between climatic, tectonic, and surface processes as applied to the evolution of active mountain ranges such as the Andes, Washington Cascade Mountains, and the Himalayas. Todd integrates a variety of tools in his research including: numerical modeling, low-temperature thermochronometry, meso-scale climate models and meteorological data, and much more. Todd will be teaching courses in: Earth Surface Processes and Soils, Making Mountains and the Earth's Surface, Tectonic Geomorphology and Active Tectonics, and a variety of courses at Camp Davis. While at the University of Michigan, Todd plans to have an active research group of both graduate and undergraduate students and to integrate field trips and computer exercises into his teaching. More information about Todd and the Earth Surface Processes Research Group is available at: [www.geo.lsa.umich.edu/~tehlrs](http://www.geo.lsa.umich.edu/~tehlrs).





**Ingrid Hendy** joined the Department in Fall 2002 as an Assistant Professor. About a decade ago Earth scientists made the remarkable discovery that climate change occurred extremely rapidly. The geochemical analysis of snow precipitated up to 100 thousand years ago in the Greenland Ice Sheet recorded cooling and warming of the planet that resulted in the advance and retreat of ice sheets all around the Northern Hemisphere. During the last ice age, when the Laurentide ice sheet covered much of Canada and the Midwest, the cool climate was interrupted by 17 intervals (Dansgaard-Oeschger or D-O events) that were almost as warm as the present, each interval lasted between 2000 and 200 years. The most shocking discovery of all was that the onset of these warm intervals and subsequent return to glacial conditions occurred in less than 50 years and in some cases as little as 3 years. It turns out the only places in which these climatic events are recorded are in exceptional conditions when sediment deposition is very rapid such as the Santa Barbara Basin where Ingrid did her PhD

work. Her thesis provided the first evidence for the presence of D-O events in the Pacific recorded by dramatic and rapid (<50 years) changes in sea surface temperature (4 to 6°C) and marine organism numbers off the coast of Southern California. As more high deposition regions are examined the mounting evidence suggests these climatic events had a global impact.

For a quarter of a century scientists have been trying to predict how much the climate will warm in response to our greenhouse gas production. Estimates vary but all suggest a slow warming of the planet, associated with changing rainfall patterns, intensifying storms and higher sea levels. However, climate theorists have been basing their predictions on the assumption that climate change occurs slowly, an assumption we now know to be false. As well, climate modelers have consistently failed to predict the extent of warming associated with the recently discovered D-O events. It is of great concern that we cannot predict the rapidity or magnitude of the temperature changes and that we are unsure of what causes the climate change associated with D-O events. This also means we are overlooking a major climatic feedback mechanism in our attempts to model the result of increased atmospheric greenhouse gases. Unlike the formation of the large ice sheets associated with the last glacial which were associated with changes in the earth's orbit around the sun, the rapid warming and cooling of ocean and air temperatures of the last glacial were not associated with any change in the external heat supply to the planet. Rather these events appear to be the result of a change in heat transport from the tropics to the poles and possibly an amplification of warming by greenhouse gases. This suggests an internal oscillation in the earth's climate system that appears to be amplified at certain intervals.

Although born in New Jersey, Ingrid grew up in New Zealand, completing her BSc and MSc by 1995. An exchange with the University of California, Santa Barbara (Education Abroad Program) brought her back to the United States in 1993, and she was introduced to Jim Kennett and paleoceanography. Ingrid returned to Santa Barbara in 1995 to complete a doctorate before moving north across the border in 2000 to undertake a Post-doctoral Fellowship with Tom Pedersen at the University of British Columbia in Vancouver.

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## ***Honors, Awards, Kudos***

Every year the Department makes several awards to both undergraduate and graduate students for academic achievement and citizenship. These awards are announced at the annual John A. Dorr Lecture and Dinner. This year's recipients are:

**Andrea Dutton:** John A. Dorr Award

**Emily Johnson:** Undergraduate Academic Excellence Award

**Tanya Shavalia:** Undergraduate Outstanding Citizen Award

**David Whipp:** Camp Davis Field Geologist Award

**Eric Tohver:** Graduate Academic Achievement Award.

Additionally, **Eric Tohver** received a National Science Foundation Postdoctoral Research Fellowship for field work in Brazil. Eric's work, in collaboration with Ben van der Pluijm, was featured in Science Magazine's Editors' Choice Column, which calls attention to important articles across all the scientific disciplines

**Robert Corbett** (BS'58, MS'59, PhD'64) is the new President-Elect of the American Institute of Professional Geologists. Bob is Chair of the Geology Department at Illinois State University.

**Rod Ewing** was profiled in the March 2003 issue of Scientific American magazine, for his views about the insuitability of Yucca Mountain for a long term nuclear waste disposal site.

**Paul Goldberg** (MS'68, PhD'72) received the Rip Rapp Archeological Geology Award from the Geological Society of America. Paul is on the faculty at Boston University.

**Jennifer Macintosh** has won a Rackham Predoctoral Fellowship

**Phil Meyers** (faculty) was elected a Fellow of the American Association for the Advancement of Science, and a Fellow of the American Geophysical Union.

**Ted Moore** (faculty) was elected a Fellow of the American Geophysical Union.

**Mark Nabong** was awarded a graduate student research grant by the Geological Society of America for his studies of woolly mammoths on Wrangel Island.

**U-M Geological Sciences students and faculty** presented 35 papers at the annual meeting of the Geological Society of America in Denver.

**John W. Geissman** (BSc'73, MS'76, PhD'80 and Adjunct Faculty) received the Distinguished Service Award from the Geological Society of America.

Best Paper Award was given to **Chris Palenik** and **Rod Ewing** for "Microanalysis of Radiation Damage Across a Zoned Zircon Crystal" at the 25th Scientific Basis for Nuclear Waste Management Conference 2001 - Materials Research Society Meeting

**Frank H. T. Rhodes**, former faculty member (1967-77) received The American Geological Institute Medal in Memory of Ian Campbell.

**Dr. Gerd Steinle-Neumann** (MS'98, PhD'01) received the Ralph B. Baldwin Prize in Astrophysics and Space Sciences in the Fall of 2002 for his PhD dissertation entitled "Physics of Iron and Earth's Inner Core". The Ralph B. Baldwin Prize in Astrophysics and Space Sciences is an award sponsored by a generous gift to the University by **Dr. Ralph B. Baldwin**. A special lecture and ceremony honoring this achievement was held on Tuesday, October 1, 2002. The title of his presentation was "What Can Mineral Physics Tell Us About Planetary Structure"? A reception followed the lecture.

Dr. Baldwin, who was unable to attend the lecture and ceremony, wrote:

"I have read his paper carefully, but I'm afraid that I am too much the old fashioned astronomer. When I was much younger, iron was something that you heated red hot and then pounded on it. If you were skillful you ended up with a usable horseshoe. We thought that the core was largely iron, but this was more guess than knowledge."

Gerd also was the winner of an Outstanding Student Award from the Mineral and Rock Physics Focus Group of the American Geophysical Union. The award recognized his PhD dissertation under the supervision of **Lars Stixrude**.

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## ***Camp Davis Alumni Getaway—Summer 2004***



The Department has decided to schedule the Camp Davis Alumni Getaway on an every other year basis, with the next event on the calendar for August 2004. For those of you that were tentatively planning on a visit this year, re-focus your plans for a large and festive group the following year. We will be providing ample advertisement of this upcoming event both in the Departmental Newsletter and in separate mailings. Don't forget— plan ahead – August 2004 Camp Davis Getaway.



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# ***Rocks and Ice: Curling-The Geologist's Game***

*by Phil McCausland (Turner Postdoctoral Fellow)*

Over the last six months a new passion has swept the Department of Geological Sciences. It is a winter sport called curling, appropriately played with rocks and ice -and beer if one is so inclined (with some tending to become more inclined than others). Curling was widely seen at the Salt Lake City Olympics last year and since then many people have been itching to try it for themselves. Happily, there are indoor curling rinks nearby, so field trips were organized to explore this fascinating game.

Our trips have been to the Roseland Golf & Curling Club in the back end of Windsor, Ontario, four times over this past academic year. Not only are there great curling facilities (ice, rocks...), but there also is a rather good restaurant attached where you can sit by windows and watch people play below on the ice. Our warm-up strategy has been to arrive early and stay warm and well-fed in the restaurant, watching other groups play until our 8:30 pm ice time came up. On two occasions we met with University of Windsor Geology friends who also like curling. Mixing U-M and Windsor, 'experienced' and beginner together, we formed up four teams of four people each and went about having fun:

The game consists of two teams alternately shoving ('throwing') 40 pound rocks down an ice sheet about the length of a bowling alley to a target area (the 'house') at the opposite end. The round rocks are intended to come to rest or otherwise interact with one another in the house. Scoring is tallied outwards from the center of the house once all 16 rocks are thrown, and then the game continues in the next 'end,' in which all the rocks are thrown back along the ice sheet to the house associated with the starting place. Dead simple.

And fun! A particularly appealing feature of the game is the opportunity for team members to influence the path of the rock once it is thrown, by sweeping the ice in front of the rock. This has the effect of helping the rock glide farther and straighter when needed, since rocks are usually thrown with a slow, controlled spin (hence the name 'Curling') to make their behaviour more predictable. Also fun is the opportunity to shout at your friends to SWEEEP! HARD! or LAY OFF! the brooms. As a bonus, almost everyone in the most recent trip fell down on the ice at least once, sometimes spectacularly. Come to think of it, I don't remember seeing anyone fall down during the Olympics...

Like any good game, curling is easy to learn, fun to play, and devilishly difficult to master. The occasional shining moments of success —getting the rock to actually do what you intend— are exhilarating for everyone. More often our efforts resulted in further chaos, but that is fun too.

Most of all, we recommend curling for its non-Olympian easy accessibility in an age where most games seem to require superfast reflexes or exceptional strength. There is something satisfyingly absurd about playing a game in which your team goal is to heave lumps of granodiorite along the ice at other lumps of granodiorite, all at a majestic pace suggestive of glaciers, or even of geologic time itself.

..... Curling, anyone?



*Big survivor smiles from The Yahoos: John Solum (right), Chris Palenik, Rob MacKay (left), and Mat Manon (upended).*



*Eric Tohver can sweep!*



*Chris Palenik, Mat Manon, and Rob MacKay (Windsor) sweep it HARD!*

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## ***Alumni Receptions at GSA, AGU, and AAPG***

For many years the Department has held an alumni reception at the Annual Meeting of the Geological Society of America. Traditionally the U-M reception has been one of the most popular gathering places of all the university receptions taking place. This year's meeting in Denver was no exception, with more than one hundred folks stopping by during the evening.

Less traditional (in fact never before) is an alumni reception at the Fall Meeting of the American Geophysical Union in San Francisco. In the past, because there was no central venue at the AGU, no headquarters hotel for hosting all of the alumni receptions, this had discouraged receptions altogether. Last December we decided to break this pattern by holding a reception in a hotel quite independently of the AGU and other universities. The result of this pilot experiment was nothing short of sensational, with more than 120 U-M grads and friends stopping by for some conversations and beverages. Heartened by this excellent turnout, we plan to make the AGU reception an annual event as well.

The third meeting where we host a reception is at the AAPG annual meeting, this year in Salt Lake City on Monday, May 12, 5:30-7:30 p.m. at the Grand America Hotel in the Tuscany Room. Please drop by and say hello.

For all receptions, a few weeks in advance, you will receive a card from the Department giving the day, time and location. Spouses, significant others, and guests are always welcome.

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## ***Alumni News***

**Jonathan Bloch** (MS'95, PhD'01) and **Beth Kowalski** (MS'95, PhD'01) have taken up residence in Rapid City, South Dakota, where they have joined the South Dakota School of Mines and Technology. Jon and then-undergrad **Doug Boyer** recently had an article published in *Science* on the origins of grasping primates. Doug is now a grad student at SUNY-Stony Brook.

**Carlton Brett** (MA'75, PhD'78) of the University of Cincinnati has just published an illustrated guide, *The Trilobites of New York*.

**Shelly Ericksen** (BS '98) writes "My grad studies at San Jose State are going quite well, and the faculty is just great — very hands-on and helpful. I'm working with Jonathon Miller, and my thesis focus is in igneous petrology — specifically, looking at varying extents of mingling and hybridization of mafic and felsic magmas within a pluton that has beautiful roof-to-floor exposure. The project involves detailed field mapping, combined with isotope and geochemical analyses that will potentially determine mafic and felsic end-members, and aid in the reconstruction of the pluton's evolution. The pluton is Miocene-age, and is located in the Eldorado Mountains of southern Nevada (in the Mojave). Both the region and the rocks are amazing — the West has definitely got some great geology!"



**William Flenniken** (BS'56) sent a note from Ottawa, Canada, with thanks "for sending me your alumni news and for keeping me on your active mailing list all these years. I will remember you for this kindness and will always cherish the memories of the happy times spent in Ann Arbor".

**Luis Gonzalez** (MS'83, PhD'89) has taken a new position on the faculty of the University of Kansas in Lawrence. He will be teaching stable isotopes, carbonate petrology and geochemistry. For many years Luis has been on the faculty of the University of Iowa.

**Justin Ham** (BS'97) and Jeannette Stawski were married in February. Justin is a geologist with the Traverse Group in Ann Arbor, and Jeannette is the Director of Outdoor Adventures at U-M. Jeannette is the niece of **David Stawski** (BS'61).

**Cornelius Loeser** (MS'47) writes: A little girl asked "why do we study rocks"? A very important and profound question – needs a complete answer: I suggest – often you see exposed on the side of a hill a lot of rocks lined up parallel which look like pages in a book. They are in fact pages in a book. The book of planet Earth. We know how to read the page numbers and even chapters. But the book is very mixed up. We find parts here and there, but the book is all messed up, we find some parts here and some in Australia or Africa. Often the pages are bent and crumpled up – it's a job to straighten out. At the beginning of the book there were no animals or plants but they later came to light as simple forms, gradually changing so there were all kinds of plants and strong animals but not people. People developed only near the end from other animals. So the study of rocks tell us who we are and how we got here! A very interesting story!

**Franz Meyer** (MS'75, PhD '79) retired from Saudi Aramco. After ten years of service as a geologic consultant, he made his return to the U.S. from Saudi Arabia in December, 2001. Colorado Springs, Colorado, is the place he now calls home. An appreciation for the subtle shades of green, the mountains and time to start life anew mark his return. He has founded Carbonate Research Consulting, Inc to keep his geologic interests alive. A current project is an invited paper on the sequence stratigraphy of the Khuff reservoir for GeoArabia. Between work, there is time to enjoy the great outdoors through road biking, snow shoeing and hiking. A goal nearly realized is covering 40 km in one hour, something taking a little longer than expected to achieve at 7500 feet elevation. Cabinet making remains an active pursuit, as a number of empty rooms in his house need furniture. Once settled into his new life, he intends to devote more time to his dormant passion, reef ecology, and bring related environmental issues to the community. It is good to be home and realize all the freedom the US offers.



**Leon Reiter** (MS '68, PhD '71) writes that he was quite surprised to read in the last Geoscience News that he had retired! He says "Please don't tell the people who send me my paycheck every month!" Leon is still working for the U. S. Nuclear Waste Technical Review Board, perhaps the smallest agency in the federal government. They advise Congress and the Secretary of Energy on the scientific and technical validity of the civilian nuclear waste (spent fuel and high-level radioactive waste) program, i.e. Yucca Mountain and related issues.

**David A. Rochna** (BS '58, MS '61) recently moved to Hot Springs, Arkansas. With a bicycle in his garage and a kayak on his boat dock he is able to enjoy his favorite pastimes in a beautiful environment. The mountains are a pleasant change from the flat coastal plain of Houston.

**Ronald Seavoy** (BS '53, MA '65, PhD '69) released his sixth book, titled *A New Exploration of the Canadian Arctic*, published by Hancock House, British Columbia, 2002. The book recounts his experience as an exploration geologist for INCO working in the western arctic, north and east of Yellowknife. It centers on the years 1960 and 1961 when he conducted helicopter exploration searching for base metal deposits. During the summer of 1961 he did all of the initial sampling on a gold bearing outcrop that became the Lupin Mine in 1982 – and is still in production. It is a travel adventure story containing 21 chapters in 192 pages, plus maps and 29 color photographs. It describes little known arctic phenomena and how the melting of continental glaciers 10,000 years ago affected the earth's climate. This was real global warming.



*[Editor's note: This is one of occasional mini-profiles of Geoscience alums as their careers unfolded and took unforeseen directions. Here we write about Ed Dibble (BS '55, MS '56) who now lives in Lakemont, Georgia.]*

**Ed Dibble** (BS '55, MS '56) is living evidence that there is life after a lay-off, because he has been a multiple-career man. Ed finished his MS at U-M in 1956 and, like so many new geologists of the time, headed to the oil-patch. He was hired by Atlantic Refining Company in Midland, Texas, and all went well for a few years, that is until the oil boom at that time went bust in 1963. In Midland alone, then a town of 60,000 citizens, more than 650 geologists were out of work. Ed recalls that there were 1,800 homes abandoned in a subdivision called the Permian Estates.

The tough times turned Ed to new careers, first with IBM where he learned some ins and outs of data processing, and later with Arthur Young and Company in Atlanta where he was a management consultant for data processing systems. From around 1970 until 'retirement' in 1985, Ed worked as an independent consultant, mostly in data systems, remote sensing and image analysis for a wide variety of major petroleum companies, as well as the CIA, American Bell, and INCO Nickel. His last formal 'job' was with 3M/COMTAL where he was the Geosciences Business Development Manager from 1983-85.

After retiring in 1985, Ed went to Georgia Tech to begin work on a PhD in Water Resource Management and Technology and Science Policy. He also took up silversmithing, which led to teaching classes on this craft to young and old alike (see photo), but with the consequence of moving the dissertation onto the back burner. Ed and wife Rozanne (an Ann Arbor native) now live in Lakemont, Georgia, in the northeast corner of the state. But sedentary they are not. They like to rent an RV on occasion and hit the highways for a couple of months to see America, incidentally collecting a new pile of rocks to take back to their Georgia home.

Ed's advice to today's students: "Be fast and flexible".

**Eric Essene** spent most of last August being diagnosed for renal cell carcinoma and having one of his kidneys removed. After two months recuperating from the operation, Eric's prognosis seems very good. He returned to full time teaching and research by mid-October. Eric shared the teaching of Mineralogy 231 last fall with **Zeb Page**, who taught the first half of the course very capably, and who also ran the Bancroft field trip. Again the 231 students had small term projects on minerals that were collected on the trip. This year the trip got to the MacDonald Mine, and several students worked on unusual minerals from that locality, including fergusonite ( $\text{YNbO}_4$ ), as well as metamict thorite ( $\text{ThSiO}_4$ ) and thorianite ( $\text{ThO}_2$ ). Eric is teaching all of Thermodynamics and Phase Equilibria (GS 553) and is sharing Petrology 310 with **Becky Lange** this winter term.

Eric was recently funded on an NSF proposal with **Dan Core** (PhD, '04) for research with **Steve Kesler** on highly oxidized granites associated with porphyry copper deposits. Dan is heading to the Australian National University (ANU) to evaluate  $\text{Ce}^{4+}/\text{Ce}^{3+}$  in zircons. While there he likely will run across **Brad Opdyke** (PhD, '90) and **Richard Arculus** (U-M faculty member, '83-'89), both of whom are on the faculty in the Department of Geology at ANU.

**Casey Donohue** completed his dissertation (PhD, '02) on Wind River and other research and is now working for Exxon in Houston. Several other graduate students, **Eric Tohver** (PhD, '03), **Chuck Carrigan** (PhD, '04), **Zeb Page** (PhD, '04), **Chris Smith** (PhD, '06) and **Matt Manon** (PhD, '07), are currently working in part with Eric. Zeb and his wife Lili just had a 9.1 pound baby boy, Jack in early January. Congratulations to the Pages on their large addition to the family!

Eric's older daughter, Michelle Essene Haroldson, had a baby boy, Kai, last February. Michelle and her husband Jeff recently moved back to the Minneapolis area from Albuquerque. Michelle is a doctor currently working part time in a family practice, and Jeff is a pharmacologist who has been working on transplant and heart studies. Eric's younger daughter, Ren, continues in her quest to build housing for all the needy people in Missoula, Montana. So far she has completed more than a hundred units in the area.

At the October GSA meeting in Denver, **Steve Kesler** and Hiroshi Ohmoto from Penn State (which cannot beat U-M in football) organized and chaired a Pardee Conference on *Evolution of the Early Atmosphere, Hydrosphere, and Biosphere: Constraints from Ore Deposits*, which was co-sponsored by NASA, the Society of Economic Geologists and the Geochemical Society, and involved 35 speakers from 13 countries. A volume of papers on this topic now being assembled for publication by GSA. Just before the GSA meeting, Steve and three colleagues held an NSF-supported conference on *Research Opportunities in Geology and Geochemistry of Mineral Deposits*, which included 38 people from all branches of ore deposit research and exploration. A report from that conference is scheduled for release by NSF in a few weeks. In January and early February, Steve participated in NSF MUSES (*Materials Use - Science, Engineering and Society*) conferences in Washington, D.C. and New Haven, CT, on cement and iron alloy metals, respectively. During most of the Fall and Winter, Steve has chaired the geochemistry section of the EarthLab effort, including attendance at two conferences in Washington. EarthLab is an NSF initiative to fund a large underground laboratory that would meet the needs of physicists, geologists and engineers for research on topics ranging from neutrinos to life in extreme environments. An article on this effort appeared recently in Geotimes.

This March through May **Kacey Lohmann** participated in the Ocean Drilling Program's Leg 208 drilling on the Walvis Ridge of the West Coast of Africa. As Kacey boarded the ship in Rio de Janeiro, Brazil, he had an opportunity to see **Phil Meyers** who completed his time at sea. The target



of this cruise was to recover complete sequences of the Maastrichtian through Neogene section from this Southern Atlantic Ocean locality. Of particular interest to Kacey's research is this older interval which spans from the late Cretaceous up into the Oligocene, a period of time during which major oscillations in global climate occurred. His research group at Michigan has previously undertaken extensive studies of the paleoclimate record from shelf sequences exposed on Seymour Island, Antarctica. This research has focused on high resolution sampling of the growth structure preserved in Cretaceous through Eocene bivalves to provide not only estimates of mean annual temperature, but also a record of annual seasonality in temperature. Work undertaken on planktic and benthic faunas recovered from this drilling leg will provide data to place our earlier results with a latitudinal framework. Throughout this interval, with warming of the high latitude sites, the latitudinal gradient in temperature becomes most critical in controlling the nature and energetics of ocean and atmosphere circulation.

This was Kacey's second cruise with ODP; in 1995 he participated on Leg 159 which drilled the transform margin off the coast of Ghana and the Ivory Coast. Despite the excitement of again having the opportunity to undertake this research cruise, as the time neared for departure he wondered about the long two months at sea. Why would anyone choose to be isolated in a scrap of metal bouncing on the ocean for this long?

**Phil Meyers** was at sea on Ocean Drilling Program Leg 207, Demerara Rise.

Phil was 9 degrees north of the equator and 300 miles northeast of the coast of Surinam for six more weeks while the JOIDES Resolution drilled four sites on the Demerara Rise. These locations all promise to yield expanded sedimentary records of the Paleocene-Eocene Thermal Maximum and of Cenomanian-Santonian black shales. Because the depths of the sites range from 1800 m to 3200 m, their sediments capture different parts of the paleoceanographic record.

This was Phil's seventh ocean drilling cruise; except for one in the Mediterranean Sea, all have been on passive margins that contain Cretaceous black shales. As a shipboard organic geochemist, his job is to monitor gas concentrations to ensure drilling safety and to determine the amount and type of organic matter in the sediment. All seven of his cruises have let him indulge in his interest in learning how organic-carbon-rich sediments are formed and what they imply about the Earth's past.

The scientific party on this cruise numbered 29, and assisted by 17 technicians. The ages of the scientists cover a 40-year range, with Phil as the oldest and an undergraduate geology major as the youngest. Six of the old sea dogs have been on a combined total of 40 cruises, but most of the scientists are on their first. The combination of experience and eagerness is fun, yet everyone shares the same enthusiasm as they discover what lies beneath them.

A special, non-scientific feature of Leg 207 was the crossing of the equator during its transit to Rio de Janeiro. Shellbacks, like Phil, took great pleasure in initiating the many pollywogs into King Neptune's good graces.

***Geochronology and Isotope Geochemistry Lab (GIGL) Renovation Completed:*** Since his last update, Sam Mukasa has been consumed by lab renovations that were projected to take less than a year, but which actually has ended up taking nearly two years. Murphy's Law has been on perfect display with just about every aspect of this project.

During this period, **Kate Griffin** (MSc'02) joined the group from the University of Wisconsin, Madison, and worked on the geochemistry and geochronology of a thick, Archean volcanic sequence on the Kaapvaal Craton in South Africa. Being an extremely efficient individual, Kate has already submitted her thesis, graduated and moved on to "the real world." **Chuck Carrigan** also joined the

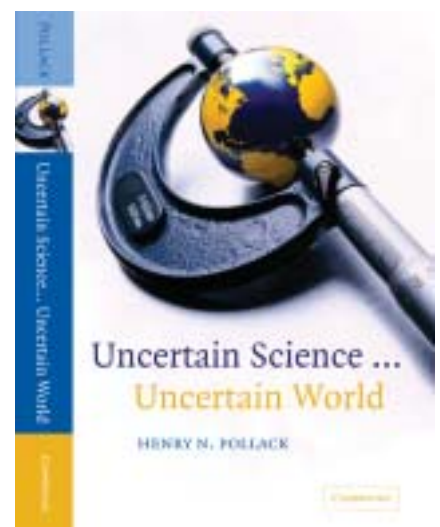
group from Vanderbilt University and started working on the tectonic evolution of the Balkan terranes, focusing chiefly on Bulgaria, an island of relative stability surrounded by a sea of political chaos. Displaced continental, oceanic, and island arc terranes that bridge the gap between the Alpine and Himalayan mountain belts dominate Bulgarian geology, and these are Chuck's main targets. Chuck has already done two field seasons with Sam and **Dr. Ivan Haydoutov** (Fulbright Fellow '97 – '98) of the Bulgarian Academy of Sciences, and this summer will return to Bulgaria for his third. **Zeb Page** completed his MSc on some high-pressure metamorphic rocks exposed in the southern Appalachians working with **Eric Essene** and Sam, and began working on a PhD in the Franciscan Mélange rocks of California and Oregon. Former postdoctoral research fellow **Alex Andronikov** took over stewardship of the GIGL lab from **Sandy Zeff** (BSc'93), who resigned to pursue another career, but has remained a very valuable consultant.

In the teaching arena, Sam has continued to teach the Isotope Geology course with **Kacey Lohmann**, undergraduate petrology – alternating rather irregularly with **Becky Lange** – and a freshman seminar about the evolution of the Earth. In June 2002, he also ventured out to field camp for the first time and did the regional trip at the start of camp with **John Geissman** (PhD '80, and adjunct faculty at U-M). The flight from Detroit to Denver to catch up with the caravanning field camp students had its own excitement when the smell of burning tires became quite noticeable soon after takeoff. Sam's plane made an emergency landing in Grand Rapids with six fire trucks lining the runway, and thankfully all were evacuated safely from the aircraft.

More recently, Sam has just returned from a month-long trip to the Philippines (see photos), South Korea and Japan to do fieldwork and give talks at a few universities. Work in the Philippines took him to five active volcanoes – Bunsan, Iriga, Mayon, Pinatubo and Taal – which, among other things, are going to be the focus of a uranium-series disequilibrium and  $^{10}\text{Be}$  study. Work on Mt. Labo had to be abandoned because of skirmishes between the Philippine armed forces and the National People's Army (NPA). Sam is presently on sabbatical leave and will spend the time writing papers and developing protocols for the new multicollector inductively coupled plasma mass spectrometer (MC-ICP-MS) that **Joel Blum** and Sam purchased with NSF funding recently. If you come to Ann Arbor, please stop by and the GIGL group will be happy to give you a tour of the new facilities.

**Henry Pollack** is very happy to see his new book '*Uncertain Science...Uncertain World*' finally appear on the bookstore shelves. The book, just published by the Cambridge University Press, has been in the works for a couple of years. It addresses scientific uncertainty by placing it side by side with the uncertainty everyone faces in daily non-scientific life. Henry argues that it is impossible to eliminate uncertainty, and that decision-makers, rather than treating uncertainty as an excuse for inaction, should recognize it as a stimulus for creativity and problem-solving. The book is aimed at mature, thoughtful, educated people with non-scientific backgrounds. Henry guides readers through the debate over global warming, showing how climate scientists work and make progress in an environment of uncertainty.

Henry's research into climate change as revealed in subsurface rock temperatures continues with the able help of Applied Physics graduate student **Jason Smerdon** and long-time collaborator **Shaopeng Huang**. Together they are trying to understand how climate change taking place above the ground is transmitted into the subsurface, where it persists as an archive of change over the past 500-1000 years. This work also has a new partner, Professor (and former astronaut) Tony England in the College of Engineering, who has studied land surface processes in the context of microwave radiation upward from the ground surface that is observed by orbiting satellites. Tony's work has



long had a focus on the influence of soil moisture on the upgoing microwave signal. He is trying to provide time-dependent assessments of soil moisture over wide areas for agricultural and other applications.

**Rob Van der Voo** has been elected Vice-President of the Geological Society of America and started in this function last November. With this requiring a lot of his attention, he has ended some other activities, such as his editorship of *Earth and Planetary Science Letters*. His appointment as Director of the Honors Program in the College of LS&A is also ending, so that he will return full time to the Department. His teaching in the current Winter semester is once again the main introductory geology course with laboratories and discussion sections (117-119), which is offered every semester and enrolls some 160 – 180 students. Rob's graduate student **Daming Wang** is now in his fourth year of work on the magnetic properties of ocean-floor basalts supervised by Rob and **Don Peacor**, whereas **Maodu Yan** (working with Rob and **David Rea**, **Josep Parés** and **Xiao-Min Fang** from Lanzhou University, Visiting Scientist, 1996, 2001), continues his magnetostratigraphic studies of the Neogene deposits of northeastern Tibet. **Adam Collins** has graduated with a MSc degree in Summer 2002, having written and submitted for publication an interesting study of the Paleozoic paleomagnetism of Kazakhstan. This is a collaborative project with **Dr. Misha Bazhenov** (Visiting Scientist, 2002) of the Geological Institute of the Russian Academy of Sciences, and has led us to conclude that the horse-shoe shaped structures of the Paleozoic formations in that country constitute an orocline; in other words, the highly curved belt was originally nearly straight, and was most likely part of one large island-arc that stretched from Siberia to northern Europe in an ancient ocean between these cratons. Lastly, a new postdoctoral fellow has joined our paleomagnetic team: **Phil McCausland**, who obtained his PhD from the University of Western Ontario in 2002, has started a project to investigate North America's paleolatitudes in the latest Proterozoic, a time for which some scientists have postulated a most unusual climatic condition called the Snowball Earth. Because during the "snowball" conditions glacial relicts are thought to have formed in low latitudes, data on the paleolocations of the various continents are needed to test this model.

Part of last year's efforts of **Ben van der Pluijm** focused on completing the second edition of the structural geology and tectonic textbook, *EarthStructure* (co-authored with Steve Marshak, UI/UC). In contrast to the first edition, there was no sabbatical to dedicate large blocks of time to this endeavor, so the work was parceled through the year. It's done! The text, published by W.W. Norton, should appear late in 2003, ready for Winter '04 adoption. Graduate students **Noralynn Hassold**, measuring magnetic fabrics in modern Atlantic Ocean ODP core, **Philip Ong**, analyzing paleostress and rotations in the Pennsylvania Salient, **John Solum**, working on brittle fault zone properties, and **Eric Tohver**, studying Grenville rocks in western Brazil, made sure that there was enough research activity to keep up the pressure. In addition, several visitors made use of Michigan's X-ray fabric equipment and electron microscopy facilities, including a return to earthquake-generated melt rocks, called pseudotachylyte. All this meant a full, yet pleasantly rewarding year. Ben did not travel much last year, except for a couple of talks in Europe, but many frequent flyer miles were collected by student travel to their respective field areas. This summer, Ben hopes to revisit Brazil and help with the introduction of PC-based mapping in Wyoming's Camp Davis.

In the educational arena, Ben has become increasingly interested in using computers (TabletPCs; picture left) for fieldwork, which has led to a successful proposal to equip this summer's 440 students with TabletPCs, loaded with ArcView-based mapping tools and other visualization tools and an equipment gift for development by the Microsoft company. Can you imagine mapping with a small, powerful PC, which is equipped with (3D) topographic maps, high-resolution aerial photos, dedicated GPS, and





“electronic ink” for recording? We’ll tell you next time how our imagination worked. In the classroom, we have started to use “responder units”, which are radio devices that allow student responses in real-time (picture right), offering an excellent opportunity for discussion. It encourages participation in large lecture rooms and, importantly, seems to offer a much better sense of what is on the students’ minds through anonymous responses.

Ben and Lies’ two boys continue to feast on the seemingly endless opportunities in sports, interrupted by schoolwork. While soccer continues, basketball has taken a more prominent position in their minds. Their father seems better at fouls than hoops.



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## ***In Memoriam***

**William H. Boyer** (BS’54, MS’60) passed away in 2002. Bill remembered fondly his years at Michigan while he worked toward his Masters Degree. He was proud to be an alumnus.

**Nancy Cassin** (BS’46) 78, passed away on June 30, 2002 at her home in Midland, Michigan. Nancy was born in Texas, grew up in New York, and studied geology at the University of Michigan in Ann Arbor, graduating with a Bachelor of Science degree in 1946. She remained a lifelong supporter and fan of “Big Blue.” After graduation she went to work at the Illinois State Geological Survey, where she met her future husband, Richard Cassin. They were married in 1948 and subsequently raised their six children in Illinois, Texas, and Colorado before returning to Midland permanently in 1975.

Nancy was active in the League of Women Voters and the Midland Gem and Mineral Society. She performed countless hours of volunteer work for the Gem and Mineral Society, the Midland Public Library, and numerous other community organizations. She was an enthusiastic reader, birdwatcher, pianist, geologist, and naturalist. She was also an avid rock hound throughout her life, and nothing made her happier than hiking across the countryside searching for interesting rocks to add to her collection. She will be remembered for her kindness, her gentle spirit, and her devotion to her family and friends. Nancy is survived by Richard Cassin, her husband of 53 years, and her six children and six grandchildren.

**Emma Jean (Brownie) Leverault** passed away on October 18, 2002 in Ann Arbor. Brownie was formerly married to Professor Louis Briggs of the Department. In 1970 she married Leo Leverault, an engineer and colleague in the Acoustics and Seismics Laboratory of U-M’s Willow Run Labs. Both Brownie and Leo later were associated with the Environmental Research Institute of Michigan in Ann Arbor.



**William Kneller** (PhD'64) passed away on September 13, 2002, at the age of 73. Bill was the long-time Chairman of the Geology Department at the University of Toledo. His research interests spanned a wide spectrum, with special interests in aggregate characteristics of sand and gravel, and in coal petrology. His studies of coal were aimed at characterizing the mineral and trace element content, the chemical and structural properties, and the ways in which coal's organic and mineral components reacted in combustion and in the process of forming synthetic fuels.

As an undergrad at Miami University (Ohio) Bill, along with Bo Schembechler, played collegiate football under Woody Hayes. He also excelled in track and field events, especially the shot put. Bill was a veteran of the Korean War, and spent 30 years in the U. S. Marine Corps Reserve, retiring in 1981 as a colonel.

After receiving his PhD at U-M in Ann Arbor, Bill went to Toledo to build the Department. At that time it was a small geology and geography department with only a few undergraduate courses and only one classroom. Bill split off geology into a separate department, initiated research activities, and designed and implemented undergraduate and master's degree programs. He was the founder and organizing force behind U-T's Wilhelm Eitel Institute for Silicates and Ceramic Research, and obtained the endowment for the Institute. Bill published scores of scientific papers and reports. He was a member of the Geological Society of America, the Society of Economic Paleontologists and Mineralogists, and the Society of Economic Geology.

Bill's grandson, **Erik Kneller**, is currently enrolled as a graduate student in U-M's Department of Geological Sciences.

**Richard Mahard** (Visiting Faculty), Professor Emeritus of Geology and Geography at Denison University, where he taught from 1941 to 1980, died April 9, 2002, at the Inn at SharonBrooke in Newark. He was born on July 5, 1915, in Lawton, Michigan. Dr. Mahard was a graduate of Michigan State Normal College and earned his MA and PhD from Columbia University. During his academic career of almost 40 years, Dr. Mahard developed special interests in world political geography, the geology and geography of the U.S. generally, and the emerging field of plate tectonics. During summer vacations, he held visiting academic positions at Stanford University, Columbia University, the University of Michigan, and during two sabbaticals he was a visiting scholar at the London School of Economics. At Denison and elsewhere, Dr. Mahard gained a reputation as a consummate teacher and in 1998 received the Distinguished Service Award given by Denison University. Following the completion of the F.W. Olin Science Hall at Denison, Dr. Mahard was recognized for his steadfast support of the university and its students by naming the Mahard Map Room in Olin Hall.

Dr. Mahard was the last member of the Denison faculty to retire who was active throughout World War II. During that time he taught world geography to cadets enrolled in a pre-meteorology training program of the Air Corps. He also taught a map-reading course required of Marine Corps V-12 trainees. During World War II, he served with the U.S. Army in Japan, 1945-1946. When the Air Force Reserve Officer Training Corps program was established at Denison during the Korean conflict, Dr. Mahard served as instructor in world political geography and subsequently was awarded a Distinguished Service Certificate by the Secretary of the Air Force.

Dr. Mahard served as Secretary, and later as Vice-President of the Geology-Geography section of the American Association for the Advancement of Science. He was a Fellow of the AAAS, the Geological Society of America, and the Ohio Academy of Science, where he served one term as its president.

**Richard Thomas Liddicoat, Jr.** (BS'39 Geology; MS'40 Mineralogy) died at the age of 84 on July 23, 2002 in Los Angeles after a courageous battle with cancer. He was born in Kearsarge, Michigan on March 2, 1918 but spent most of his early years in Ann Arbor where his father had become Professor of Engineering at U-M. Dick was inspired by his two immigrant miner grandfathers (from the UK) to become a geologist. On the recommendation of Prof. Chester B. Slawson, U-M Department of Mineralogy, Dick was hired in 1940 as "Assistant Director of Education" by Robert M. Shipley, founder of the non-profit educational and research Gemological Institute of America (GIA) in Los Angeles. At that time the fledgling GIA, founded in 1931, had about 10 employees and was the only place in the USA offering formal training in gemology. Today GIA has over 700 employees worldwide. Dick quickly rose to Director of Education before leaving in 1942 for the U. S. Navy where he rose to the rank of Lieutenant JG in World War II. He served as weather officer on aircraft carriers in the Pacific.



After military service he returned to GIA and was named Director of Education and Research. In 1947 he published the first edition of *Handbook of Gem Identification* now in its 12<sup>th</sup> edition; other books published in subsequent years include *The Diamond Dictionary* and *The Jewelers' Manual*. By 1952 his was Executive Director (later re-titled President) of the GIA, a position he held until he retired in 1983. During this period his innovations and clairvoyance helped shape, and re-shape, the entire gem industry. Dick's most famous achievement was the establishment of the "International Diamond Grading System" in 1953. This method has become the diamond industry standard and evaluates diamonds on the basis of the 'four Cs': color, clarity, cut, and carat weight. This achievement catapulted Dick into an exalted position in the diamond and gemology worlds. Retirement for Dick was in name only as he retained, until his death, two titles to which he actively contributed: Chairman of the Board of GIA and Editor-in-Chief of *Gems & Gemology*, the world's premier journal in the field.

In his lifetime Dick received over a dozen major awards and honors, the most recent being "Man of the Year", posthumously, from *JCK* [Jewelers Circular Keystone] in December 2002. His informal titles, e.g., "Father of Modern Gemology" and "Ultimate Gemologist", are testimony to his professional greatness. He was especially proud of the mineral 'liddicoatite', a member of the tourmaline group, named in his honor in 1977; gem specimens of liddicoatite are a spectacularly beautiful red color.

Dick Liddicoat was not only a man of many technical accomplishments but he was also a warm, modest, charming, and generous person who showed great concern for others. He was immensely proud of his Michigan heritage, and the excellent education he received at the U-M that prepared him for his professional career. The Department of Geological Sciences and the University of Michigan have lost a distinguished graduate and a great friend, and the profession of gemology has lost one of its most eminent and capable leaders.

Dick was predeceased by his wife of 56 years, Mary Imogene ("Gene"), in 1995. His younger brother William Keith Liddicoat, also a U-M geology graduate (BS'49, MS'53), passed away in 1998 (see *Geoscience News*, January, 1999). Dick is survived by several cousins and legions of admirers.



**William F. Slawson** passed away on September 22, 2002 in Sault Ste. Marie, Ontario at the age of 73. Bill was the son of Chester Slawson, longtime professor in U-M's Department of Mineralogy. Bill obtained a PhD in Geological Engineering at the University of Utah in 1958, and went on to postdoctoral research at the University of Toronto. In 1961 he became a professor in the Department of Geophysics and Astronomy at the University of British Columbia in Vancouver, a position he held until his retirement in 1992.

**Raymond Smith** (MS'61, PhD '64) passed away on March 24, 1999 at the age of 66. He had fought a long and courageous battle with prostate cancer. He was Professor Emeritus of Environmental and Earth Sciences at Eastern Connecticut State University at the time of his death.

**Howard E. Stacy** (PhD, '66) passed away on May 17, 2002, at the age of 79. He served with the 11th Airborne Division of the U. S. Army during World War II in the Asiatic Pacific Theater, primarily in the Philippines. He was awarded the Bronze Star, the Purple Heart and the Philippines Liberation Medals. Howard earned BS and MS degrees in geology from the University of Nebraska and thereafter spent a decade in the West Indies before coming to U-M for his PhD. From 1966 onward until his retirement from Exxon in 1986 he and his wife lived in Houston.

**Eugene H. Walker** passed away on December 31, 2002. He graduated from St. Paul's School in Concord, NH and then Harvard, by benefit of a scholarship and work. He majored in Geology (1937). He first worked shoveling copper ore in Bisbee, AZ, then worked with the Cajuns on Mississippi levees before getting a job as a field geologist for Shell Oil Company in Texas. He obtained a teaching fellowship at Harvard and earned an MA degree. During the war he worked for Strategic Minerals Agency in tin mines in Bolivia. He finished the requirements for the PhD at Harvard and then taught at the University of Michigan ('46-48). He married his student, Mary Morris (MA'47) on August 27, 1947. He then worked for the Water Resources Division of the United State Geological Survey from 1949 through 1979, in Kentucky, Iowa, Idaho, and finally Massachusetts, mapping water yielding formations. It pleased him to help find underground water supplies for towns and for ranchers, farmers and the general rural public. He resided in Concord, MA from 1968. He served a year as President, and then several years as treasurer of the Friends of the Concord Free Public Library. He served a term as President of the Thoreau Society. After retirement he did volunteer work for the Concord Department of Natural Resources. He wrote many professional papers and some lay reader articles such as one in Massachusetts Audubon explaining the natural causes of changes in water level in Walden Pond.

His hobbies were reading, woodworking, photography, writing poetry, fishing, and sketching. He took his family camping and hiking in summer and skiing in winter for many years. He and his wife traveled widely to places such as New Zealand, Europe, the Caribbean in the winter and Canada in summer.

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## **Degrees Granted**

### **PhD**

**Casey Donohue**, *Late Archean Metamorphic History of the Wind River Range, Wyoming.*

**John Fortuna**, *Geochemical Investigations of the Role of Sulfidation in Deposition of Gold in the Twin Creeks and Screamer Carlin-Type Deposits, Nevada.*

**Yang Liu**, *Water in Rhyolitic and Dacite Melts.*

**Joshua Trapani**, *Molarization and the Evolution of Teleost Dentitions.*

### **MS**

**Katherine Griffin**, *Magmatic and Tectonic Development of the Pongola Supergroup and Post-Pongola Granitoids, Kaapvaal craton, South Africa.*

**Jerome Guynn**, *Origin of the Lithospheric Stress Field.*

**Tina Johnson**, *Age Calibration of Red Clay Piston Core EW9709 PC-07, Equatorial Central Pacific*

**Christina Knowlton**, *Historical  $\delta^{18}O$  and  $\delta^{13}C$  Compositions from Lake Erie: A History of Eutrophication and Climate Change.*

**Mark Wenzel**, *Geoid Constraints on Mantle Viscosity Structure.*

### **BS**

**Hunter Blair**

**Tracy Kolb**

**Bradley Boring**

**Rachel Kornak**

**Bradley Deline**

**Colleen Linger**

**Katherine Fleming**

**Michelle Stocker**

**Rebecca Foulger**

**Luke Vermeulen**

**Jaka Hardiwinangun**

**Kelly Wells**

**Emily Johnson**

**David Whipp**

## Turner Lecture Series, 2002-2003

The Turner endowment in the Department (the gift of Scott Turner, a former director of the U.S. Bureau of Mines) enables a weekly series of visitors who present a lecture or seminar to the faculty and students, and interact with them for a few days in informal ways. The exchange is truly bi-directional: the Department becomes better acquainted with the visitor's teaching and research activities, and the visitors learn of the scientific activity in the Department. The lecture series during the past academic year included the following presentations:

September 13, 2002	<b>Dr. Frank Richter</b> University of Chicago	<i>Early history of the solar system as seen by Ca-Al-rich inclusions in meteorites</i>
September 20, 2002	<b>Dr. Gerry Dickens</b> Rice University	<i>Extreme climates, frozen methane and subsurface microbes: Reconstructing the global carbon cycle with vast deposits of gas hydrate</i>
September 27, 2002	<b>Dr. Kathy Cashman</b> University of Oregon	<i>How lava flows: The rheology and emplacement dynamics of Hawaiian basaltic lava flows</i>
October 4, 2002	<b>Dr. Karen Fischer</b> Brown University	<i>Sesimological constraints on subduction zone process</i>
October 11, 2002	<b>Dr. Terry Plank</b> Boston University	<i>Recycling through the subduction factory</i>
October 18, 2002	<b>Dr. Berry Lyons</b> Ohio State University	<i>The biogeochemistry of antarctic closed-basin lakes: The influence of climate</i>
October 25, 2002	<b>Dr. Aline Cotel</b> University of Michigan	<i>From volcanic eruptions to oceanic turbidity currents: A physical approach to transport across stratified interfaces.</i>
November 1, 2002	<b>Dr. Grant Garven</b> Johns Hopkins University	<i>Hydrogeologic modeling of fluid flow, Faults, and sediment-hosted ores at Red Dog, Alaska</i>
November 8, 2002	<b>Dr. Ed Garnero</b> Arizona State University	<i>Revealing earth's dynamic deep interior</i>
November 15, 2002	<b>Dr. Brian McPherson</b> New Mexico Tech	<i>Studies of diagenesis and its effect on regional scale permeability and hydrodynamics</i>
November 22, 2002	<b>Dr. Basil Tikoff</b> University of Wisconsin	<i>Coupling of crustal and mantle deformation: A geological perspective</i>
January 10, 2003	<b>Dr. Simon Kelley</b> The Open University	<i>Dating terrestrial meteorite impacts: Is there any relationship with stratigraphic boundaries?</i>
January 17, 2003	<b>Dr. Deborah Thomas</b> UNC-Chapel Hill	<i>Neodymium isotopic reconstruction of early paleogene thermohaline circulation</i>
January 24, 2003	<b>Dr. Peter Schlosser</b> Columbia University and LDEO	<i>Visualization and quantification of transport in the aquatic environment by means of natural and anthropogenic trace substances</i>
January 31, 2003	<b>Dr. Alex Forte</b> University of Western Ontario	<i>Thermochemical upper-mantle heterogeneity below North America from tomography-based mantle flow models</i>
February 7, 2003	<b>Dr. Birger Schmitz</b> University of Sweden	<i>Early paleogene climates and events</i>
February 14, 2003	<b>Dr. Mark Brandon</b> Yale University	<i>Using plant fossils to estimate latitudinal offset of the far-traveled Baja BC terrane</i>
February 21, 2003	<b>Dr. Neil Shubin</b> University of Chicago	<i>Dawn of the age of salamanders in Northeast China</i>
March 7, 2003	<b>Dr. Delphine Patriarche</b> University of Michigan	<i>Analysis of transport mechanisms in argillites in Tournemire (France): Implications on safety of nuclear waste deposits</i>
March 14, 2003	<b>Dr. Paul Tapponnier</b> IPG-Paris	<i>The growth of the Tibet Plateau and the rheology of continents</i>
March 21, 2003	<b>Dr. Richard Alley</b> Penn State University	<i>Abrupt climate change: Signal, noise, and climate surprises</i>
March 28, 2003	<b>Dr. Abby Kavner</b> UCLA	<i>Electrochemistry and the Earth's core-mantle boundary</i>
April 4, 2003	<b>Dr. Ian Carmichael</b> UC Berkeley	<i>Experiments, thermodynamics and the evolution of magmas</i>
April 11, 2003	<b>Dr. Dianne Newman</b> Caltech	<i>Microbe/mineral interactions: Gaining insights into the past through molecular microbiology</i>



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Residence Address \_\_\_\_\_  
Street Address City State Zip

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Position Company

\_\_\_\_\_ Street Address City State Zip

e-mail address \_\_\_\_\_ Would you like to be added to an alumni e-mail group? yes  no

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Degree \_\_\_\_\_ College or University \_\_\_\_\_ Year \_\_\_\_\_

Degree \_\_\_\_\_ College or University \_\_\_\_\_ Year \_\_\_\_\_

Spouse \_\_\_\_\_  
Year of Wedding

Child \_\_\_\_\_  
Name Birth Date

Child \_\_\_\_\_  
Name Birth Date

Child \_\_\_\_\_  
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Child \_\_\_\_\_  
Name Birth Date

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