

FALL 2010

THE COLLEGE OF arts&sciences

# earth & environmental sciences

2010 DEPARTMENT NEWSLETTER



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# Letter from the Department Chair



Greetings from the UK Department of Earth and Environmental Sciences! We have some good news to report: the department is growing once again! These words are especially sweet in the current difficult economic times. We appear to be holding further loss of

faculty lines at bay with two excellent additions to the faculty who will join the department in Fall 2011. One of them is Dr. Kevin Yeager from the University of Southern Mississippi, who will come in as an Associate Professor. Dr. Yeager is a coastal sedimentologist with an excellent funding record and outstanding growth potential. He has been actively involved in assessing the impact of the recent Gulf oil spill on coastal marine environments. He is very highly regarded by funding agencies and we are proud to be able to hire him in the department. In a second faculty position, we were able to hire Dr. Sean Bemis, who is presently on a two year Mendelhall post-doctoral fellowship at the U. S. Geological Survey. Dr. Bemis' specialty is neotectonics and he has a tremendous potential to be an outstanding geoscientist. We are all eagerly awaiting their arrival.

We also have been authorized to hire another faculty member in hydrogeology in the current academic year. Hydrogeology is an area that continues to attract a lot of good graduate student applicants and is thus crucial for the expansion of our graduate program. We will be interviewing candidates just after the New Year and hope to hire an outstanding faculty member in this area in Spring 2011.

Our graduate program has nearly doubled in size in the past three years, and we are offering a breadth of graduate courses despite the size of the department. Our graduate students continue to be attractive to industry and we hope that many more companies will visit the department in the coming years; our students get good reviews from employers who come visit us.

We have forged and continue to forge new relationships with the Kentucky Geological Survey, the Center for Applied Energy Research, and the Tracy Farmer Institute for Sustainability and the

Environment. Several of the scientists in these organizations contribute to the department through teaching and advising graduate and undergraduate students. We are working to get them joint and adjunct appointments so that they are more engaged in the departmental activities and its well-being.

Last year's successful Brown-McFarlan fund-raising campaign will make it possible to maintain research and conference funding to our increasing numbers of graduate students. Education research and our experience shows the more the students are actively engaged in research, the better is their academic engagement and performance. We need to create more research funding and scholarships for involving more undergraduate students in research.

It is always nice meeting and learning about the activities and travels of alumni and friends of the department. So drop us a line about what you are up to, or drop in when you are passing through Kentucky or visiting family. Best wishes for a healthy and productive 2011!

Sincerely,

Tiku Ravat, Chair  
Department of Earth & Environmental Sciences

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## And a short note from the Newsletter Editor...

Welcome to the 2010 EES/Geology Newsletter. The Newsletter is 'thin' again, but that doesn't mean there isn't a lot going on in the Department. Much more info and the latest news are listed on the Department web page, which can be found at:

[www.as.uky.edu/ees](http://www.as.uky.edu/ees) or [www.as.uky.edu/geology](http://www.as.uky.edu/geology).

The Rast-Holbrook seminar schedule is always posted there (seminar is open to all), along with News and Events, Awards, Alumni activities, and even a Retrospective Field Camp gallery of photographs from the 60's, 70's, and 80's. Thanks to Rob Levy, Hubert King, Susan Eriksson, Tom Spalding and Kit Clemons for many of those photos. When viewing the photos and PowerPoint slides, keep in mind that "things were different" back then, and we had a higher tolerance for demonstrative student behavior...;-).



A small note...cont.

The task of maintaining our Department web page has been assumed by Professor Chris Romanek and Dr. Suvankar Chakraborty, one of Chris's post-doctoral scholars. The task of EES 'web master' is not in the job description of either Chris or Suvankar, and they generously volunteered their 'free time' to updating those pages. As Chris notes in his faculty news article, feel free to suggest items that could be included on the website!

Thanks to all of you and best wishes for 2011!  
Dave Moecher, Associate Professor

### NEW ON-LINE GEOLOGY COURSES!

UK is jumping head long into the on-line education field. The goal for the on-line courses is to provide more instructional options for working students and students off campus. For EES, Dr. Steffi Schwabe developed an online Oceanography class, and Dr. Kent Ratajeski developed and taught an online version of GLY 110 (Introduction to Environmental Geology) during the 2010 8-week summer session as part of a pilot project administered by the College of Arts and Sciences. The course featured on-line access to course content (lectures, videos and video clips, interactive homework, review sheets, and announcements) and deployment of online quizzes and exams. One of the students enrolled in the course was taking the course from China! This is that student's impression of the course:

"I have been working as an onsite golf course designer and construction manager at an ocean-side resort in southern China for the past 3 years and have been battling a dynamic water table with elevations varying from 1.2 m to as high as 3.5 m in the center of the peninsula. I have also seen some bad stuff with the development of the beach and primary dunes, and recently sat down with the general manager of the development and made him watch the video on coastal erosion. It opened his eyes and we are now working with a specialist engineer from Singapore to do away with the planned walls.... Anyways, just wanted you to know that this is not just a class I need for a degree, I am very interested and will use these tools in my daily life."

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## Stay connected...

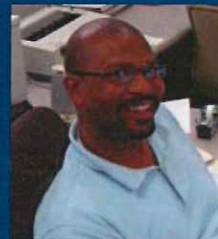
You can keep track of Department events, the Rast-Holbrook seminar schedule, our contact information, and alumni events via the Department web page:

[www.as.uky.edu/ees](http://www.as.uky.edu/ees)

## ...and keep in touch!

Please let us know if your address or contact information change. Send a note to, email, or call George White, the department Administrative Assistant:

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Mr. George White, EES Staff Assistant

COVER PHOTO MONTAGE: Snapshots and images of UK Geology Field Camp through the decades. See p. 7 for a note on the planned field camp reunion in summer 2011.



# Department News

## 2010 Degrees

### Undergraduate Degrees

#### Bachelor of Arts

Brian Carroll  
Tom Csenge  
Michael Fox  
Lee Gatterdam  
Alek Grietens  
Brian Huff  
Ben Kirkland  
Katherine Miller  
Stephen Morgan

#### Bachelor of Science

Melissa Ditty  
Antonia Hansen (Cum Laude)  
Rachel Hatch  
Mao Oyama

### Graduate Degrees

#### Master of Science

Donny Loughry: "Origin of Blue Ridge Basement Rocks, Dellwood Quad, Western NC: New Evidence from U-Pb Zircon Geochronology and Whole Rock Geochemistry" (Dave Moecher)

Ashley Gilbert: "Latest Quaternary Paleoclimate Reconstruction Utilizing Stable Isotopic And Trace Element Proxies in a Stalagmite from Culverson Creek Cave, West Virginia" (Harry Rowe)

Allison Richardson: "The No. 5 Block Coalbed in Eastern Kentucky: A Critical Re-Examination of the Petrology with Special Attention to the Origin of Intertinite Macerals in The Splint Coal Lithotypes" (Jim Hower, Cortland Eble)

Mike Solis: "Tectonic Controls on Lower Devonian Sandstone Distribution Alabama" (Bill Thomas)

John Warden: "Feasibility of Using <sup>15</sup>N-Enriched *Escherichia Coli* as a Bacterial Tracer in the Cane Run/Royal Spring Basin, Kentucky" (Alan Fryar)

#### Doctor of Philosophy

Suvankar Chakraborty: "Provenance of the Ocoee Supergroup, eastern Great Smoky Mtns." (Dave Moecher)

Brian Cook: "Palinspastic Reconstruction Around a Thrust Belt Recess: An Example from the Appalachian Thrust Belt in Georgia" (Bill Thomas)

Matthew Massey: "Transpression, deformation partitioning, and extrusion in the Appalachian orogen, southern New England, U.S.A." (Dave Moecher)

Lois Yoksoulain: "Effect of Contact Metamorphism on Coal Geochemistry and Petrology: Implications for the Large-Scale Release of <sup>12</sup>C-Enriched Methane" (Sue Rimmer)

## Student Awards

(photos from award presentation viewable at our Dept. home page: [www.as.uky.edu/ees](http://www.as.uky.edu/ees) or [www.as.uky.edu/geology](http://www.as.uky.edu/geology))

Pirtle Outstanding Senior Scholarship:  
Trevor Strosnider

Glenn Rice Memorial Tuition Scholarships:  
Jill Riddell, Phil Wolfe

Sigma Gamma Epsilon Tarr Award:  
Mao Oyama

Oustanding T.A. Awards:  
Donny Loughery  
Devi Ugdata

## TRANSITIONS

Professor Bill Thomas retired from the Department after 20 years of service at UK and many more years at other institutions (see following section on Faculty News). In recognition of this event, several of Bill's former students organized the Bill Thomas Retirement Symposium held April 16-17, 2010 on the UK campus. In addition to alumni, faculty, and staff, the Symposium featured keynote addresses by the following geologists, students, and friends of Bill:

|   |                                      |
|---|--------------------------------------|
| Joe Allen, Concord University                   | Drew Andrews, KY Geol. Survey        |
| Ricardo Astini, Universidad Nacional de Córdoba |                                      |
| German Bayona, Corporación Geológica ARES       |                                      |
| Thomas P. Becker, ExxonMobil                    | Jim Drahovzal, KY Geol. Survey       |
| Frank Effensohn, UK EES                         | Brent Garry, Smithsonian Institution |
| Bob Hatcher Univ. Tenn.                         | Lyle Mars, U.S.G.S.                  |
| Rob McDowell, Univ. Georgia                     | Helen Sestak, HighMount E&P          |
| Mark Steltenpohl, Auburn Univ.                  |                                      |
| Jim Tull, Florida State Univ.                   | Rob Van der Voo, Univ. Michigan      |



Some of the Bill Thomas retirement symposium attendees: L-R, front: Jim Drahovzal, German Bayona; rear: Lyle Mars, Joe Allen, Tom Becker, Drew Andrews, Bill Thomas, Jim Tull, and Brent Garry



## Featured Faculty News

[illegible]

Life is rarely boring in "Water World"! A year ago we relocated to the first floor of SLone following Chris Romanek's arrival. We have great lab and office space. Ironically, there was a flood from a shower in Chris' lab over Thanksgiving weekend, which caused a big mess but not too much damage. Second-year MS student Emily Eastridge and senior Rachel Hatch are working together to analyze sediment samples that my former student and ongoing collaborator Abhijit Mukherjee (PhD 2006) collected in West Bengal, India. They're examining contrasts between adjoining areas with and without arsenic contamination. Second-year MS student Ashley Barton is building on the tracer studies of James Ward (PhD 2008) and John Warden (MS 2010), using the stable isotope nitrogen-15 to label microbes like those found in local karst aquifers. After spending last fall back home in Nepal with his family, Ganesh Tripathi (MS 2009) returned to start a PhD with me in January. He's developing a higher-resolution conceptual model of groundwater and contaminant influxes to Little Bayou Creek downstream of the DOE Paducah Plant. Three new students joined us this fall. Cory Black Eagle (BS UK, MS ECU) will work with Jim Dinger (KGS) and me on a study of the Cane Run/Royal Spring basin. Terry Hamilton-Smith (BS, MS MIT) will be working with me on a study of water resources in Pakistan. Catherine Skees (BS WKU) will be studying water quality in a karst groundwater basin. I'm delighted that Abhijit and James have been hired as assistant professors near their homes: Abhijit is at the Indian Institute of Technology-Kharagpur, while James is at Angelo State University. My interests continue to be eclectic. Last fall I taught a graduate seminar on environmental characterization and restoration at DOE facilities, which featured a potpourri of guest speakers and case studies, including visits to the Fernald and Mound sites in Ohio. For 2 weeks after Christmas, I was in Islamabad, Pakistan, as a Fulbright Senior Specialist. Zulfiqar Ahmad (PhD 1992), chair of the Department of Earth Sciences at Quaid-i-Azam University, was my host. I visited several universities and government agencies, lectured to a graduate class, and spoke at a symposium. I also served on a review panel for Pakistani academics who had applied for Fulbright Scholarships to spend a semester or year in the USA. They were all in the humanities or social sciences; the topics were a bit of a stretch for me but were fascinating. (One winner, who's visiting Harvard, was a Rhodes Scholar and had a recommendation letter from a Nobel Laureate.) I met many thoughtful, talented people and was treated very hospitably. My experience was so positive that I returned the day after my final exam in the spring for an NSF-funded workshop in Islamabad. It was hotter, but I was able to travel more widely, including to Lahore and into the Himalayan foothills. In between, I traveled to Morocco for a conference in March and had a great time reuniting with colleagues there. (I also auditioned for "Jeopardy!" in Chicago the day before I flew back to Pakistan in May. It may be more than a year before I know whether I've been selected for the show.)

**Frank Ettensohn**>>>>>>>>>>>>>>>>>>>

As many know, black shales are once again very important as major sources of gas in the U.S., and many new deposits are being explored and brought into production. As a consequence, there has also been a renewed interest in my past and present black-shale research. I have been invited to present at

black-shale symposia, and once again, we are seeing interest among students in studying these unique rocks. In fact, at present I have a new graduate student, Ralph Bandy, studying cyclicity in these rocks. After the discovery of a three-tone dropstone in the Ohio black shales of northeastern Kentucky, my research has taken a new direction, namely, the influence of glaciation in generating black shales. This summer I went back to China to work on late Precambrian and Ordovician-Silurian black shales with Chinese researchers, with whom I have been working since 2005.



To date, we have published several papers in both English and Chinese on our findings. I also taught two classes in English for Chinese students while I was there. In an attempt to follow-up on the theme of glacial influence, I attended the Annual Meeting of the International Association of Sedimentologists this fall in Mendoza, Argentina, and participated in a week-long field trip to the Precordillera Mountains of western Argentina to examine glacially related sedimentation. In addition to seeing some great classic geology, the trip opened up for me a completely new realm of sedimentary geology, and one that has largely been ignored in the study of classic Appalachian geology. I also have students working on Mississippian echinoderm faunas (A. Harris), Ordovician carbonates below the black shales (M. Clepper) and in Ft. Payne mud mounds, which are important reservoir rocks in south-central Kentucky and central Tennessee, just above the Devonian black shales (D. Udoata).

[illegible]

I'm beginning my fourth year as Lecturer in EES, and am teaching my usual slate of courses for Gen Ed students, geology majors, and graduate students. Summer was eventful: I pioneered an online version of GLY 110 (Endangered Planet: an Introduction to Environmental Geology; see p. 2), taught a two-week course (Introductory Environmental Geology in



Field) in the Black Hills of South Dakota for Wheaton College (Illinois), visited Yosemite National Park in California, and became a father to a beautiful baby girl—Margaret Ruth. In October, I then led a fieldtrip to Yosemite Valley for a National Association of Geology Teachers field conference held in Fresno. I have been Rast-Holbrook Seminar coordinator the past two years. The seminar schedule is always available on the EES Dept. website.



## Featured Faculty News

[illegible]

Greetings from Slone-It is amazing how time flies by! While I am still the new kid on the block (but not for long), my first full year at UK has provided ample opportunity to reflect on the wonderful benefits of calling Lexington our home. This last year was a busy time for me with teaching, research and service. Last spring I taught my first graduate level class, "Stable Isotope Geochemistry". In addition to lectures, the students received hands-on training with instrumentation and they completed two research projects on: 1) the paleoclimate of Kentucky by analyzing speleothems from Stab Cave in Pulaski Co., and 2) the origin and modification of natural waters used to make Kentucky's finest distilled spirits. Needless to say, the students had a great time working at their field sites and they collected some very meaningful and publishable data! My research program has brought me close to home this year but also far afield. The primary focus of our group was the synthesis of unusual carbonate minerals as analogues for materials recently detected on the surface of Mars. If we can better understand how these minerals form in the lab, this will give us insight into formation mechanisms for the earth's oldest sedimentary carbonates and extra-terrestrial materials. Closer to home, we initiated a program to use accretionary carbonate structures (e.g., stalagmites and fossil shells) as historical archives of environmental information, and we have commissioned a meteorological station on the roof of the Slone Research building (yes, we are using every bit of space that Slone has to offer). We will be collecting water samples and meteorological data to better understand the geochemistry of natural waters that eventually become groundwater resources for Kentucky. I was fortunate to recruit four outstanding graduate students to work on exciting theses and dissertations, and we have two new post-doctoral associates, who are busy at work in the laboratory developing their own academic careers. Also, our lab hosted visiting international scholars from Spain, France and Turkey over the last year.

If you perused our departmental web site recently, you may have seen a few changes, notably the inclusion of web pages for graduate and former students (with pictures and brief descriptions). If you would like to be included, or perhaps even contribute to an expanded ALUMNI page, please send me ([c.romanek@uky.edu](mailto:c.romanek@uky.edu)) your information and I will be sure to post it on the web. Our website is a window on to the world; it is a place to showcase our dynamic past and future. Please consider spending a minute or two to contribute to our effort. Finally, should you or your family be visiting the department this coming year, please stop by the stable isotope lab and say hello; we will give you the grand tour, even to the top of Slone!

## Bill Thomas Retrospective >>>>>>>>>>>>>>>

I arrived at the University of Kentucky in 1952 as a freshman geology major. During the next five years, I developed a strong personal attachment to the Department, the faculty, fellow students, and UK. Who could forget the ping-pong table in the basement of Miller Hall, every Saturday in the field, joking with Dr. Mac, black boxes full of fossils and wooden trays full of minerals, three summers on Cement Creek, and an overall sense of belonging? Miller Hall was my second home. I spent a little time running track with Coach Don Seaton, watching football with Coach Bear Bryant, and watching basketball with Coach Adolph Rupp. I left UK in 1957, having completed B.S. and M.S. degrees in geology. Following my Ph.D. at Virginia Tech in 1959, I worked as a petroleum geologist for The California Company (Chevron), and taught geology at Birmingham-Southern College, Queens College of City University of New York, Georgia State Uni-

versity, and the University of Alabama. In 1990, the opportunity came to move to the University of Kentucky. The Department was housed in Bowman Hall, which had been my dorm in 1953. In 1991–1992, the Department moved into the Slone Building. Reflecting on the past 20 years, I have enjoyed my association with faculty colleagues and the growth of the Department; my greatest personal satisfaction has been the stimulation of working with an outstanding group of graduate students, including 11 Ph.D. and 10 M.S. graduates, and one current Ph.D. student.

In April, we had a great sendoff with a two-day symposium, including former students and research colleagues (see photos and a list of speakers). Following my retirement on June 30, 2010, Rachel and I moved to Tuscaloosa, Alabama. Why Alabama? The southern Appalachian thrust belt and foreland have been my geologic home since my days on the faculty at Birmingham-Southern, and my research is here. I am now a Visiting Scientist at the Geological Survey of Alabama at the University of Alabama, enabling me to pursue my research. Oh, yes, our daughter Amy and husband Robert Orr and four sons live in Birmingham; our oldest grandson is a freshman at the University of Alabama. Our daughter Carolyn and her husband Lyle Mars (UK geology Ph.D.) and our fifth grandson live in suburban Washington, DC; they visit Alabama fairly frequently. What am I doing now? Pursuing my lifelong profession and hobby—geology. I am finishing research articles that had been on hold for want of time, preparing 7.5-minute quadrangle maps for Survey publication, and writing summaries of regional stratigraphy and tectonics of the Appalachian and Ouachita orogenic belts. I presented a paper at the GSA meeting in Denver, as well as a seminar in the department at UA, and I have a presentation at AGU in December. I may be as busy as I've ever been, and I am enjoying it all. Best of all, my schedule is flexible, and Rachel and I have time together. We took an extended trip for GSA in Denver, going to the Air Force Academy, Great Sand Dunes (of which we never tire), and our two favorite Colorado small towns—Redstone and Marble (sometimes called Black and White, because Redstone was a coal-mining and coking town, and the world-famous quarry at Marble provided white marble for the Lincoln Memorial and the Tomb of the Unknown Soldier). I am pleased to continue my association with UK as an alum and emeritus faculty member and to be able to continue my research here in the Appalachian thrust belt. The best of all worlds!

Below: Bill Thomas being presented with a retirement gift by Pam Stephens and Pete Idstein (at right), current EES staff members, and Mary Sue Johnson and Debra Smith, former EES staff members during Bill's time at UK (rear left).





# Update from the Alumni Board Chair



With the departure of several faculty members, hiring of a new Arts & Sciences Dean and the financial crisis, this past year has been a challenging one for both the Department and the Geology Alumni Board. The immediate need was influx of new faculty to replace those that had retired but

budget restraints throughout the University and new people in the College of Arts & Sciences made the odds of getting replacements pretty high. The goal of becoming a top 20 institution and the necessity of recruiting world-class faculty made this task even more difficult.

I am extremely pleased and proud to say that the Department and the Board were more than up to the task! In August of 2009, we met with the new Dean of Arts & Sciences, Mark Kornbluh. Our alumni board members very persuasively convinced the Dean of the imperative of hiring Geology faculty to maintain the high quality of education in the Department. Over the next two years the Department will welcome a neo-tectonics expert and a world-class sedimentologist. The hiring of a third faculty in hydrogeology is expected this year. My heartfelt thanks and congratulations to a great alumni board team: Rusty Ashcraft, Maggie Brewer-LaPorta, Will Foley, Jill Krukoski-Gregory, Jay Henthorne Jr., Curt Hull, Jon Konkler, Rod Metcalf, Wendell Overcash, Sarah Mardon Shearer, Tom Spalding, and Steve Sullivan. I would also like to thank a really amazing new addition to the College of Arts & Sciences, Dean Mark Kornbluh. Mark has made some tremendously exciting changes to the College over the past year and his strong vision for the College will surely translate into good things for Geosciences.

Over the next year the Department and Alumni Board will continue to ask your help in providing undergraduate scholarships for geoscience students. Several local events will be held throughout the year in various parts of the country so look for an email about these in the near future. Also, we're really excited to announce the planning of a Field Camp "Reunion" set for mid-summer of 2011. It's 'all of the fun' and 'none of the work' for a long weekend and a portion of the proceeds will benefit undergraduate scholarships as well. Watch for email updates.

Best wishes for a wonderful new year!  
Elizabeth A. Haynes (M.S., 2000), Chair Alumni Advisory Board

## 2010 Contributions

We greatly appreciate the support of our generous alumni, the alumni board members who provided extra energy to help us reach our goal, and their employers who supported the Department in the past year!

## Alumni Donors

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## 2010 Fundraising Successes!

During the 2009-2010 academic year the Alumni Advisory board and our generous alumni were successful in permanently endowing the Brown-McFarlan Fund used to support graduate student research. Thanks to corporate and state matching the campaign exceeded the \$100,000 goal by \$90,000!

# THANK YOU!!

Don't forget to look at the Field Camp retrospective photo album at:  
[www.as.uky.edu/ees](http://www.as.uky.edu/ees), click on "Alumni & Giving" and "Field Camp Through the Decades"



# Support Opportunities

Your support of the UK Department of Earth & Environmental Sciences helps provide opportunities for our outstanding undergraduate and graduate students. All contributions to the Department are tax deductible.

## Rast-Holbrook Fund

Supports the department seminar program, an opportunity for students to interact with researchers outside the department

## GEOFund

Supports general departmental needs

## Wallace Hagan Scholarship Fund

Supports undergraduate scholarships

## Glenn Rice Memorial Fund

Supports undergraduate tuition scholarships

## Haynes Field-Trip Scholarship Fund

Supports student travel on field trips

## Development Fund

Provides additional resources for graduate student recruitment

## Geology Support Fund

Supports initiatives for long-term quality of the department

You may use the on-line donation process at:

[https://giveto.uky.edu/AS\\_p/as.htm](https://giveto.uky.edu/AS_p/as.htm)

Or you may send donations directly to the department:

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