Department of Earth and Planetary Sciences

University of Tennessee, Knoxville

2007 Annual Newsletter

2007 Newsletter
Department of Earth and Planetary Sciences
University of Tennessee, Knoxville

Editors: Larry McKay and Bill Deane

Cover photos:

Top: Posed against the distant Rocky Mountains are current and former grads, (l-r) Tasha Dunn (Ph.D. candidate), Emily Goodman (M.S. 2007), Whitney Kocis (Ph.D. candidate), Cara Thompson (Ph.D. candidate) and Valerie Reynolds (Ph.D. 2005). Photo provided by Tasha Dunn.

Bottom: The Stack of Glencoul region in Scotland was visited by Bob Hatcher during the May 2007 Arthur Holmes Meeting. The actual Stack is the small high knob in the far center background. This region is famous for the mid-1800s controversy regarding the interpretation of the contact between Precambrian metamorphic rocks over fossiliferous Paleozoic sedimentary rocks. The contact was correctly interpreted in the 1850s as the Moine thrust. The yellow flowers are gorse. Photo provided by Bob Hatcher.

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LETTER FROM THE HEAD - Hap McSween

Welcome to the 2007 edition of the Department of Earth & Planetary Sciences newsletter. This year has morphed into one of those occasionally stormy ones that change the very face of the Department, and I'll summarize the storms as best I can.

First of all, you may be surprised to see my name (again) on the banner of this letter – and, to be honest, so am I. Our Department Head, **Claudia Mora**, has taken a year's leave of absence, and it seems quite likely that she won't return to UT. Claudia and her husband, Lee, have taken research positions at Los Alamos National Laboratory. This move was a very difficult decision for Claudia, and we really miss her scientific contributions, teaching expertise, and leadership. I was appointed as Interim Head just prior to the beginning of the fall semester. The Faculty, together with the Dean, will decide on the parameters for the search for a new Head at the beginning of the next academic year, once we know whether Claudia will return.

There are other momentous changes in personnel as well. Professor **Kula Misra** retired in May after 30 years of stellar service to UT. As Professor Emeritus, he serves on a part-time basis, teaching one course each term. Given that we are short-handed, we appreciate his continued efforts. During this academic year we are running a search for Kula's replacement, in the area of planetary geomorphology. But here is some good news – our newest faculty member, **Micah Jessup**, joined as an Assistant Professor in August. Micah is a structural geologist, replacing Professor **Bill Dunne** who is an Associate Dean for the College. You can read all about Kula and Micah in this newsletter.

Professor **Larry McKay** is serving as Director of the ISEE Water Resources Group, a part-time appointment. Larry also has been named the Geological Society of America's Birdsall-Dreiss Lecturer, a singular honor which will require considerable travel as he lectures all over the world. We also lost **Diane Pealor**, a valued member of our office staff, when he husband took a new job in Florida.

With all these changes and others made in the last several years, you will probably surmise that the Departmental personnel are different from those you remember. In the last three years we have gained four new faculty members (sedimentologist **Chris Fedo**, geophysicist **Greg Baker**, geochemist **Dave Finkelstein**, and structural geologist **Micah Jessup**). With the addition of one or more new appointments in the next two years, one-third of the faculty will have turned over in a very short time, and several other faculty retirements are in the offing. Of course, change is hard, but I view this repopulation as an opportunity – we can reinvigorate our program and adjust our expertise to take advantage of evolutionary trends in the discipline and job markets of geology. Having said that, let me set to rest any concerns you may have that we are

abandoning our geological roots. Our program is and will always be firmly grounded in studies of the Earth's geological processes, environments, and history.

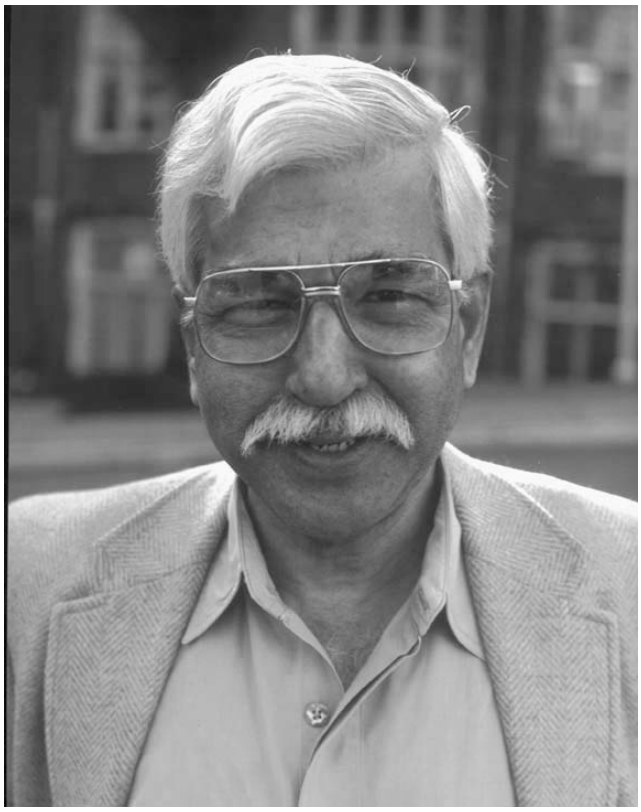
Our undergraduate program continues to be healthy, with about 40 enthusiastic majors. We are focusing on development of our departmental honors program, which offers research opportunities to undergraduate majors. We teach introductory geology (physical, historical, and environmental) to nearly 2000 (somewhat less enthusiastic) undergraduates each year. Our graduate program has 45 students, with roughly equal numbers of Masters and Doctoral candidates. We also have about a half dozen postdocs, who serve as valuable role models for graduate students.

We continue to enjoy the support of our alumni, and we appreciate the donations that all of you make to our program. The Department has benefited from an especially generous gift from alumnus **William Ross (B.S. 1960)**, and this endowment will provide new scholarships for students attending field camps. As you may know, we had to close our field camp in Dayton, Tennessee a half-decade ago, because we could not find the funds to renovate the crumbling infrastructure, and our majors now attend camps run by other universities. Between the William Ross, Don Byerly, and Don Jones Funds, all of which provide scholarships for field camp, almost all our majors receive subsidies to help defray these costs. Consequently, the Department will shift its development priorities to other critical needs. We are concentrating this year on support for refurbishing and acquiring new saws and other equipment for the rock preparation laboratory, which is utilized extensively by students and has decayed to an alarming state.

The Department continues to enjoy a strong reputation, and we have always produced geology graduates that impact the profession in many positive ways. I hope you will follow changes in the Department over the next several years with interest, which you will visit whenever you are in town and that you will continue to support us in whatever ways you can.

A rare congregation of four EPS department heads, at Claudia's going away party: Hap McSween, Bill Dunne, Ken Walker, and Claudia Mora.

PROFESSOR KULA MISRA RETIRES – Hap McSween



Kula Misra retired from UT in May 2007. He joined the faculty in 1975, and was promoted to Professor in 1982. After receiving B.S. and M.S. degrees from the Indian Institute of Technology in Kharagpur, Kula worked for the Indian Bureau of Mines and the Geological Survey of India, doing exploration for mineral deposits. He is a widely respected economic geologist and is the author of a textbook on *Understanding Mineral Deposits*. He also has worked extensively in petrology and geochemistry, and is presently writing another textbook on *Introduction to Geochemistry*. He is author or coauthor of sixty geology publications on ore deposits and other subjects.

Kula has made many important contributions to the Department. In addition to regularly teaching introductory geology courses, he has taught eight different undergraduate courses and eleven different graduate courses, mostly on topics in economic geology, petrology, geochemistry, and analytical methods. Four Ph.D. and eighteen M.S. students completed their research under his direction.

He has served on virtually every committee in the Department over the years, as well as sixteen College and University committees, the University Research Council, and the Faculty Senate. He remains the chair of the Senate Athletic Committee. He continues to work in the Department part-time as an Emeritus Professor. This year he is teaching geochemistry, and he continues to oversee academic scheduling, our weekly seminar series, and XRF facility.

Kula was recognized by faculty, staff, family and friends at a party in his honor in May. He has given much to this Department, and we appreciate his many scientific, educational, and service contributions over more than three decades. Kula has always had a warm greeting for everyone, and he will continue to be very popular with students and faculty alike. A few years ago, Kula established the Reading Room Endowment, and his many friends and former students may wish to honor him by contributing to that fund.

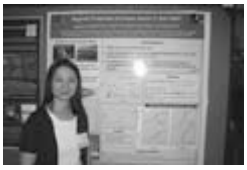
MEET MICAH JESSUP

As the newest faculty member of Earth and Planetary Sciences, I am enthusiastic about becoming part of such a great department at the University of Tennessee. My wife Laura and I moved to Knoxville this fall after a two-month expedition to Tibet over the summer. Laura is an environmental engineer with Strata Environmental. I specialize in structural geology and I am fascinated by how rocks deform and how this deformation affects tectonic-scale, as well as grain-scale processes. As an undergraduate at Hampshire College (B.A. 1998), I went on a climbing expedition to the Karakoram Range in northern Pakistan where I was inspired by the high peaks and incredible geology of the Himalayas. As part of my M.S. (2003) at the University of New Mexico, I conducted fieldwork on metamorphic and igneous rocks exposed in the Black Canyon of the Gunnison, Colorado. During this time I began to develop my skills in structural and metamorphic geology. In the summer of 2003, I drove back east to the small town of Blacksburg, VA to begin a Ph.D. project with two British co-advisors, Rick Law (Virginia Tech) and Mike Searle (Oxford University). During my Ph.D., I worked closely with mentors and peers on a range of projects based around Mount Everest. Over the course of four years I went on six expeditions to the region that laid the foundation for many ongoing research projects, which I am pursuing as part of my new research program at the University of Tennessee. The imprint of my first trip to the Himalayas still drives me back each year to stir-up new project ideas among those incredible peaks. As part of my new position, I plan to incorporate graduate students into field and lab-based projects in the Himalayas and southeastern US. My only disappointment in UTK, so far, is that David Finkelstein insisted that I memorize the lyrics to Rocky Top for the first faculty meeting; however, after I spent the summer in Tibet practicing, they never asked me to sing it!

Makalu

HUMANS RETURN TO THE MOON AND UT'S CONTRIBUTIONS – Larry Taylor

As many of you alumni will recall, Professor **Larry Taylor** and his research group of postdocs and grad students have been anticipating a return to the Moon for decades. Well, in January, 2004, President Bush gave NASA the new mission of putting humans into space, first on the Moon with establishment of an Outpost and later onward to Mars and beyond. All of a sudden, many of the studies that Larry's group had been dabbling in for years became applicable, starting with a very real need for his extensive knowledge of many things lunar. And Larry immediately became involved in a big way with NASA's efforts of establishing a permanent lunar outpost for future space explorations, aided by **Dr. Yang Liu** (Ph.D. Univ. Mich.), **Dr. Amit Basu Sarbadhikari** (Ph.D. IIT, India, 2006), **Dr. Ben Eimer** (Ph.D. NM St.), **Darren Schnare (M.S. 2006)**, **Mike Mellin (M.S. 2007)**, and his wife, **Dr. Dawn Taylor (Ph.D. UT 1988)**. The dozens of newspaper, magazine (e.g., Popular Mechanics), TV (Discovery), and internet articles around the world attest to all their activities and relate to several discoveries that will aid *in situ* resource utilization on the Moon.



Yang Liu, Darren Schnare and Dawn Taylor

All activities on the Moon, be they regolith handling and processing, or simply moving on the lunar surface, have one factor in common – involvement with *lunar dust*. Lunar dust (< 20 micron) is pervasive, abrasive, adhesive and potential toxic.

Dust prevented any of the Apollo mission sample boxes from completely sealing even in the lunar vacuum, so that all lunar rock and soil samples have been compromised by terrestrial air and water vapor. Dust covered the astronaut's suits, causing a "black-body effect" that increased the heat absorption, and therefore temperatures experienced by the astronauts. When the astronauts climbed back into the Lunar Module wearing their dusty suits and boots, the finest grains billowed into the air where they could be inhaled. This gave Apollo 17 astronaut Jack Schmitt a case of "lunar-dust hay fever," but it could have

been worse: the fine-grained nature of the lunar dust could have had a toxic effect if respired in large quantities.

Much of the unique character of lunar soils results from a weathering process dominated by meteorite and micro-meteorite bombardment. During this process, a myriad of tiny nano-sized, metallic Fe particles are formed. Larry discovered that virtually all the lunar soil particles <20 microns (the dust) can be attracted by a simple hand-held magnet.

"I didn't appreciate what I had discovered with this magnetism," recalls Larry, "until one day in my office as I was explaining it to astronaut Jack Schmitt, a good friend of our Department. Jack said, 'Gads, just think what we could have done with a brush with a magnet attached! Remember all the times I was told to clean my [camera] lens?'" Larry had been in the "back room" at Johnson Space Center, the advice center for the astronauts as they performed their duties on the Moon.

Subsequently, the UT group started designing various types of magnetic air filters, mainly for the astronaut's habitat at the new Moon Outpost. One invention was based upon a "Leaf Sucker" that is used to collect autumn leaves, but uses magnetics instead of vacuum. The Lunar Soil Magnetic Collector (LSMAC), essentially a "Lunar Soil Sucker," is an effective way to transport and move lunar regolith, soil, and dust across the lunar surface from where it is mined to a processing facility for the production of LLOX (Lunar Liquid Oxygen). Very importantly, this LSMAC keeps the dust from getting into the exosphere (the region just above the lunar surface).

The farside of the Moon is the only place in the Solar System that cannot be seen from Earth and it is free of the magnetic and radio waves from Earth, making it a great place for radio-astronomy. Unfortunately, the possibility of electrostatically levitated dust is scaring the astronomers away, but we need the astronomers, with their fine science (e.g., Hubble) and tremendous political clout

Certain people put strange things into microwave ovens. Larry is one of those. Having lots of Apollo rocks and soils from his many years of lunar research, he put some into a microwave oven. *Lunar soil placed in your kitchen microwave oven will MELT at >1200 ^{0}C BEFORE your tea-water will boil!* Most metal, like in a knife, will short out the magnetrons in an oven, but when the conducting metal becomes small enough in size, it can be an exceptional "coupler" with microwaves. That is exactly what the microwave energy senses in the lunar soil – the myriad of nanophase metallic Fe grains. But, of what use could this be on the Moon?

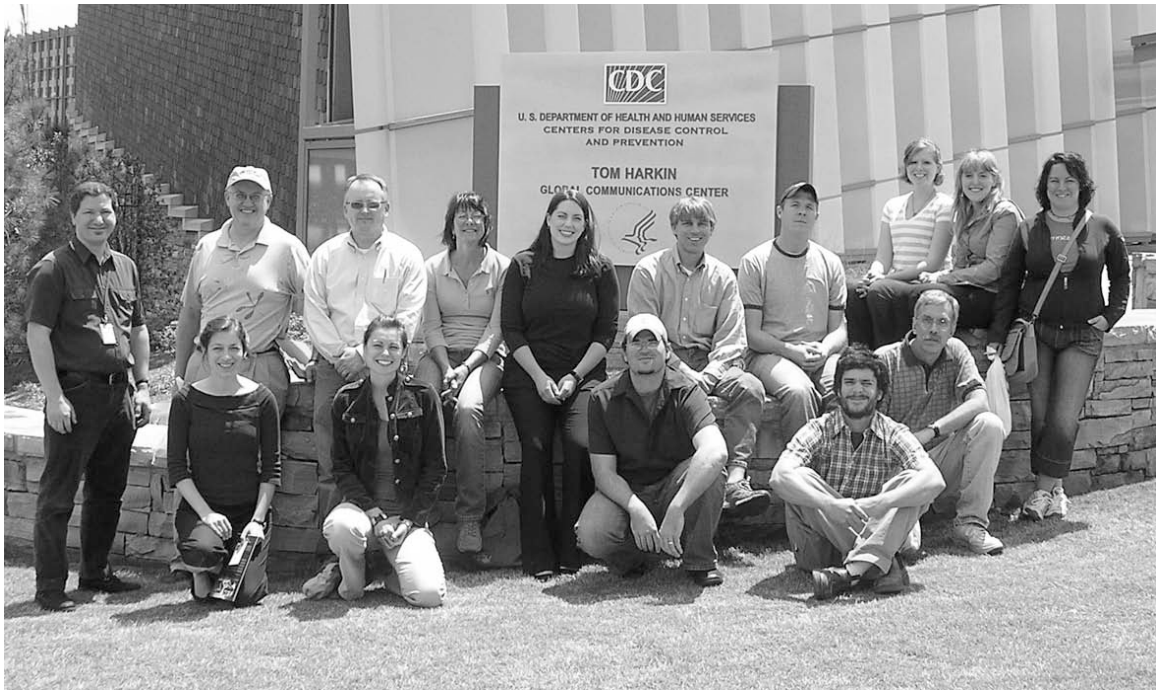
A series of magnetrons, at a certain frequency and power, could be placed side-by-side and passed over the lunar surface thereby sintering the soil to a depth of 1.5 ft. Another series of magnetrons, at a different frequency and power, could melt the uppermost 2 inches, which would quench to glass. Viola! A nice glass

road, maybe a rocket landing pad, maybe the roof on a habitat, maybe the heat source for collecting hydrogen or producing oxygen, etc.

Finally, medical doctors have Larry's team studying the finest fraction of the dust (<3 micron), in particular the particle size distribution, morphologies and reaction surface areas. Recall that the nanophase Fe is present in all the impact glass, and this glass makes up >80 vol% of this finest fraction. The mode for the largest number of particles per mass is at about 100 nm, so small that it can move directly from ones lungs into the blood stream. If the basis for the oxygen regime in your blood is the Fe^{3+} to Fe^{2+} exchange in hemoglobin, what would the presence of highly reducing Fe^{0} do to your blood?

Clearly, Larry and his team have their hands full right now ... yet, they also find time for research on meteorites and the origin of terrestrial diamonds.

EPS AT THE CDC

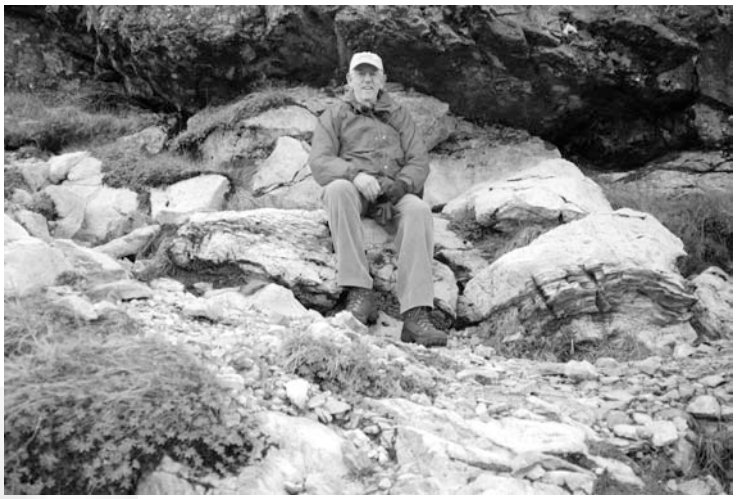


Larry McKay and his Geol 685 Pathogens in Hydrology class visited the Centers for Disease Control in Atlanta on April 27th. The visit was hosted by **Dr. Vince Hill** and **Trisha Johnson (M.S. 2005)**. The students met with researchers and toured labs used for monitoring waterborne disease outbreaks. Dr. Hill said this may be the first Geology class to ever visit the CDC, but it likely won't be the last. Dr. McKay is very active in research on waterborne fecal pathogens and plans to offer the course again in a couple of years.

BOB HATCHER IN SCOTLAND

Bob Hatcher attended the Arthur Holmes Continental Tectonics and Mountain Building meeting held in Ullapool, NW Scotland on 12-19 May 2007. Here are pictures from the field trip he attended at the Stack of Glencoul region.

Moine Thrust faulted dark rocks over North American Ordovician limestone



Ruins of castle near Inchnadamph

(Above) Thrust stack near Inchnadamph. Bob is next to a monument honoring the field geologists, Peach, Horne and others, who first mapped the Assynt region

Trail below Moine Thrust at Knockan, International GeoPark

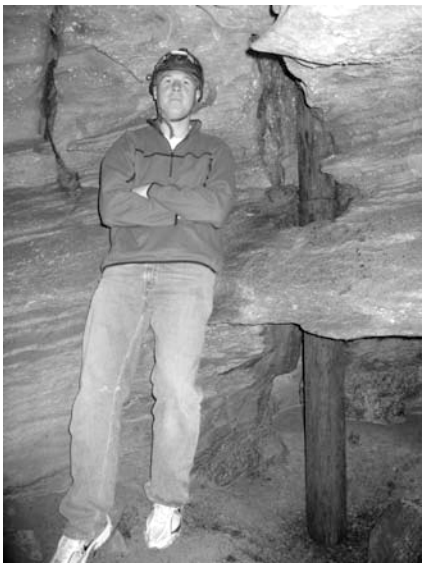
MARS ON EARTH – Jeff Moersch

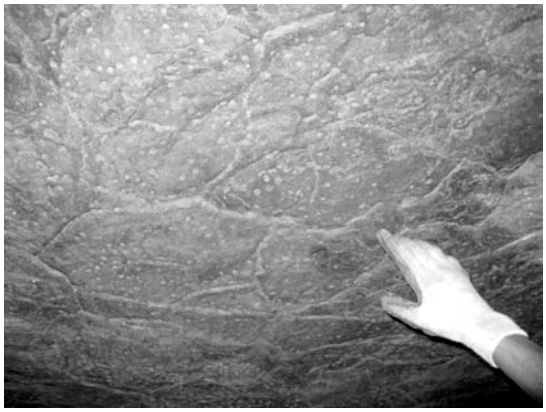
These two photos are from the project my group is doing on thermophysical characterization of terrestrial sedimentary features as analogs for Mars (funded by NASA's Mars Fundamental Research Program). The first is of **Chris Whisner (Ph.D. 2005, current postdoc)** in a rail car, which was the field vehicle we used to access the crests of the Dumont Dunes, Mojave Desert, California in December 2007.

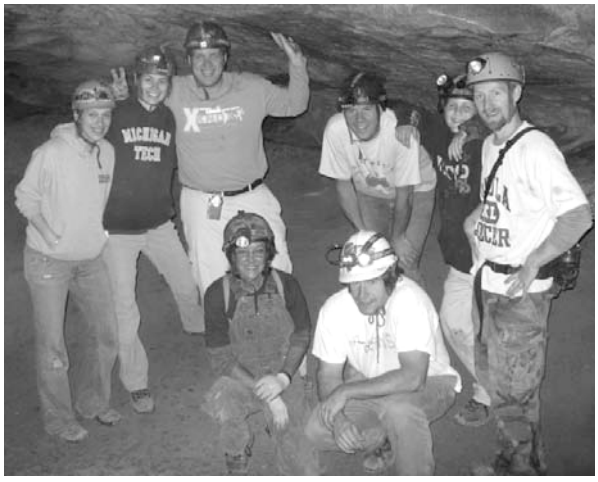
The second is of **Craig Hardgrove (Ph.D. candidate**), **Chris Whisner**, and a reporter from Geotimes named **Tim Palucka** returning to camp from the Eureka Dunes (northern Death Valley N.P., CA) after a windstorm came up. This photo was used in a June, 2007, Geotimes article about our project and a few others titled "Down to Earth With Extreme Scientists."

CAVING TRIP – Larry McKay

On Oct 26, 2007, the Geol 586 Field Hydrogeology class went to visit caves and major water supply springs near Johnson City and Elizabethton in the northeastern corner of Tennessee. The trip was hosted by **Dr. Larry McKay** and **Terri Brown (Ph.D. candidate)**, with help from **Sid Jones** and **Robert Benfield** (both at TDEC) and **Dr. Yongli Gao** (ETSU), as well as several water plant operators. We got some great pictures of the caves, but couldn't take any photos of the water treatment plants, due to Homeland Security regulations. Participants on the trip included, **Lizzie Johnson**, **Peter Knappett** and **Richard Donat** (all EPS grad students), plus **Josh Rogers** (Forestry), **Amanda McKenna** (Env. Engineering) and **David McKay** (Bearden Middle School). Caves we visited include Rockhouse Cave, which is situated beneath a utility pump house. You can see the casing from several of the wells as they pass through the cave under the pump house. A couple of the wells (which are no longer used) used to pump directly out of a cave stream that had been dammed to form a small lake. The second cave, Morrill's Cave is situated in Knox Dolomite, which is generally massive but in one place has a great outcrop of mud cracks and rain drop marks in the ceiling of the cave, indicating that these sediments experienced occasional subareal exposure during deposition.







2008 GSA BIRDSALL-DREISS DISTINGUISHED LECTURER

Larry McKay, Jones Professor of Hydrogeology in the Dept. of Earth and Planetary Sciences, was selected as the 2008 Birdsall-Dreiss Distinguished Lecturer. The lecture tour is sponsored by the Geological Society of America (GSA) Hydrogeology Division and provides travel funds for a speaker to visit universities and research institutions to talk about their research program and act as a goodwill ambassador for their profession and their home institution. This is a rare honor, with only one speaker chosen annually from the approximate 1400 members of the GSA Hydrogeology Division. Dr. McKay has already received about 50 invitations for lectures from all over the U.S., Canada, Europe and China. He is preparing three talks, illustrating the breadth of his diverse research activities, which host institutions, can choose from.

The three talks include:

1. Cracks in the Clay: The Role of Fractures & Macropores in Critical Zone Hydrology
2. Germs and Geology: Emerging Issues in Waterborne Pathogen Research
3. Chattanooga Creek: How 30,000 tons of Coal Tar Brought Together Scientists, Social Workers and a Community

Additional information on the lecture tour is available at:
http://web.utk.edu/~hydro/Birdsall-Dreiss.html

The tour officially starts in January, but Dr. McKay gave a "Kick-off" talk on November 9th in Walls Hall at UT. The talk was attended by faculty and students, along with **Dean Bruce Bursten** and about 30 members of the College of Arts & Sciences – Board of Visitors. BOV members present included Geology alumnus **Jim Bibee (B.S. 1950)** and his wife, **Virginia**, who enjoyed the talk and the chance to mingle with geology faculty and students.

At the end of his talk, **Ed Perfect** presented Larry with the very first of the *new* EPS coffee cups that will be given to all future speakers.

WEDDINGS!!!

Melissa Lenczewski (Ph.D. 2001) and **Scott Bellis** were married on March 17, 2007 in a 1940's themed ceremony in a little chapel in the pines near DeKalb, IL (which is surrounded by corn fields). Melissa is an Associate Professor at Northern Illinois University in DeKalb and Scott also works for NIU.

(left) **Larry McKay** (Melissa's dissertation supervisor) and his wife, **Anna**, attended the wedding along with several UT alumni, including (right) **Kathy Ocker-Stone (Ph.D. 2002)** and her husband, **Chris**.

Karen Renée Stockstill (Ph.D. 2005) and **Josh Cahill (M.S. 2004)** were married in Honolulu, Hawaii on September 15, 2007. Thanks to a jogging injury, Karen wore her wedding gown and a cast on her right foot. Josh is earning his Ph.D. at the University of Hawaii, where Karen continues to postdoc.

EPS guests included (l-r) **Rhiannon Mayne (Ph.D. candidate)**, **Keith Milam (Ph.D. 2007)**, **Rachel Lentz (Postdoc 1998-2004)** and **Jen Piatek (Postdoc 2003-2007)**. Rhiannon arrived early from Knoxville and helped with the last minute wedding preparations. Keith had a mad-cap trip by flying in on Friday and flying out on Saturday night.

Bryan (M.S. 2005) and **Jayne Schultz** were married June 9, 2007 at The Yellow House in Waynesville, NC in an outdoor ceremony.

Bryan has returned to EPS to earn his Ph.D.

THE EPS WEB SITE

Ted Labotka has been very busy updating the department's web site with a new look. The next time you are online, stop by and add the department to your favorites.

http://web.eps.utk.edu/

ALUMNI NEWS

Bruce Rohrbaugh (M.S., 2000) was married to **Jamie Otis** in Hixson, Tennessee, on September 23rd, 2006. The couple went off to a great honeymoon in Mexico. Bruce continues to work in the Chattanooga office of TDEC. Unfortunately, on Oct. 11th, Bruce was involved in a serious one-car accident and is now in an extended recovery. Prognosis is good.

Prof. Larry McKay had a pleasant talk with **Patsi Jones (B.S. 1964)** at the animal shelter. She graduated from UT with a major in Geology in 1964 and although she loved geology, she never pursued it as a career. She said there was very little chance of a woman getting a job in geology at that time, especially with only a BS. The oil companies were very blunt about it, telling her that they didn't hire women geologists. She wasn't bitter about it and was pleased to hear that close to half of our students are women.

Robert (Bob) Grimm (not one of our graduates, actually a College Scholar who did his research project with Hap McSween) is a staff member at Southwest Research Institute in Boulder, CO. In December 2006 he was promoted to Director of the Department of Space Studies. He is involved in research on utilization of electromagnetic methods for studying the surface of Mars.

Peter Lemiszki (Ph.D. 1992) and **Barry Miller (M.S. 1989)**, both UT Geology grads, continue to work at the TN Division of Geology and helped out with the 2007 Earth Science Fair at UT this fall. Their “Natural Hazards and Mineral Resources of Tennessee” activity continues to be one of the most popular activities at the Fair

Amy Kwiatkowski (B.S. 2000) is now a geophysicist with ConocoPhillips. She starting working in West Africa exploration, deepwater Nigeria and had the opportunity to visit Lagos twice to attend technical committee meetings. She currently works in Lower 48 Texas/Oklahoma Panhandle development, using vibroseis seismic, and will be moving to Aberdeen, Scotland in 2007 for a year-long assignment on developing the deepwater Clair Field.

Srini Krishnan Srinivasan (Ph.D. 1993) is a Senior Geoscientist for Latin America/Caribbean Exploration with BHP Billiton Petroleum in Houston, TX. He recently wrote Hap, “Thanks for the opportunity to serve on the board of advisors. I am looking forward to working with you and the rest of the faculty. I am disappointed about Claudia's departure. With you at the helm, I am confident that the department will continue to forge ahead. Here is an update on some recent changes in my career. I recently left ExxonMobil after ten years to continue my petroleum career with BHP Billiton. It is indeed a challenge when you go from a super giant to a smaller company. Time will tell if this was a wise move. In any case, I am looking forward to the spring visit to UT.”

Prof. **Larry McKay** and students from his Field and Lab Methods in Hydrogeology class ran into **Ned Peterson (B.S. 1999)** while on a drilling project at the new UT Little River Dairy Farm, located near Townsend, TN. The class was collecting cores of floodplain sediments and mapping bedrock contacts in preparation for installing groundwater monitoring wells at the site of the planned dairy and Ned was the chief of the drilling crew for S&ME Engineering. Ned was delighted to see UT students getting hands-on experience in the kind of hydrogeologic site investigations that many will go on to perform as geoscience professionals.

Ned in hardhat and the Field and Lab Methods in Hydrogeology class

Here's an update of Ned's experiences since graduating from our department:

"My career started in May of 2000 here in Knoxville with an environmental and geotechnical consulting firm. I worked as a driller's helper for one year to learn about the drill rigs and the sampling process. After that very long year I began to work on projects in the environmental field. The projects ranged from Phase I and II site assessments, underground storage tank closures, and large scale site remediation. I also began working on geotechnical projects for new road construction (DOT), bridges, and public transportation systems. I have also worked on TVA projects at many of their fossil fuel plants and at some of their dams. Some of the more interesting projects have been with DOE and at nuclear power plants. I was a field coordinator for many of these projects and traveled 100% of the time. I think from 2000 to 2006 I averaged being home about 8 days per month. I decided I needed to make a slight career change and started with S&ME in September of 2006 and now manage the same type of environmental and geotechnical projects that I started out working as the field geologist. I enjoy my work and like the variety of being involved in environmental and geotechnical projects. Outside of work, I met my wife, **Janell**, in Knoxville in 2003 and we were married in 2004. She is a small animal veterinarian and works in Powell, TN, which is also where we live. We are expecting twins in the spring of 2008! I am still steadying myself for that life changing event. We both still love Knoxville and plan to stay here for some time."

Carol McDonald was a GTA in the UTK geology department from Jan 1983 to Spring 85, but she switched to the Computer Science department and got an MS in CS. Carol is currently a Java Technology Analyst at Sun Microsystems. Before joining Sun, she worked on a car loan application for Toyota, pharmaceutical Intranet applications for Roche in Switzerland, a network management application for Digital (now HP) in France, an e-mail server for IBM in Germany, and was a student intern for the National Security Agency. Carol is fluent in French and German.

Tom Moss and Will

Tom Moss (M.S. 1982) was promoted to Deputy Director in the Tennessee Division of Water Supply as of March 1st. On June 8, his wife **Anna Leta** gave birth to their son **William (Will) Jay**. Will was 6 weeks early but we were able to bring him home after two weeks at the hospital. He was 7 pounds, 14 ounces. Our other son (my son, wife's stepson) is 23 years old.

Scott Williams (M.S. 2000) is a Geologist Specialist in Geologic Mapping & Structural Analysis at DMME/Mineral Resources in Abingdon, VA. He writes, the "state of Virginia is treating **Sara (Bier)** and me quite well as of late. She said to tell you hello. We also have a young'un who just turned one year this past week."

Sadie Mae Williams, age one

Starting with the fall 2007 semester, **Jen Piatek (Postdoc 2003-7)** accepted a tenure track position in the Department of Physics and Earth Sciences at Central Connecticut State College.

Paul Baldauf (B.S. 1985) is a Professor in the College of Undergraduate Studies at the Union Institute and University in North Miami Beach, FL. Paul has been at Union since 1998 and is active in research in the Florida Keys and received an NSF Geoscience Education Grant.

Daniel Frederick (Ph.D. 1992) is a Professor of paleontology and biostratigraphy at Austin Peay State University in Clarksville, TN. Many of his students are servicemen/women with the 101st Airborne or their spouses. He described how enrollment surges whenever the division returns from deployment and sometimes after they leave for overseas duty, because the spouses start taking courses. Daniel is looking forward to going to Frankfurt, Germany next summer to carry out geological research.

Scott Georgis (M.S. 1999) is an Assistant Professor at SUNY Geneseo, where he's active in research on the structural geology of west-central Idaho, including the Idaho batholith. He's enjoying his role as a Faculty member in a small, but very good department.

He works alongside another UT grad, **Amy Sheldon (M.S. 1995)**.

Valerie Reynolds (Ph.D. 2005) is spending a year at the University of the South in Sewanee, Tennessee as a visiting professor in the Department of Forestry and Geology. She is teaching intro geology, mineralogy and petrology.

Valerie, Josh, Sierra and baby Ada at dinner

Dan Popek (B.S. 1991) passed the Professional Engineering Exams in spring 2006 and is a licensed Geologist and Engineer for the North Carolina Department of Transportation.

Julie P. Heather (B.S. 1979) is an Associate Research Scientist in Geology and Planetary Science at Caltech.

Cricket Haygood Deane (B.S. 1969), who earned her M.S. in geochemistry at Penn State and her M.S. in computer science at UT, has returned to UTK as a computer programmer in the Digital Library Group, which is responsible for digitizing the UT library system.

Jonathan Evenick (Ph.D. 2006) left his postdoc position with Bob Hatcher and has accepted a position with the BP oil company in Houston, Texas starting in September 2007.

We continue to see a strong showing for our students at ExxonMobil**. Emily Goodman (M.S. 2007)** started with Exxon in Houston in September 2007. She mentioned in a recent e-mail, that an evening gown is the proper attire for the ExxonMobil Christmas party

And **Steve Welch (M.S. 2005)** returned to ExxonMobil in October, after a nine month leave of absence which he took to support his wife **Amy's** active career.

Dee Dee Boykin (M.S. 1998), husband **Jeff**, and daughter **Faith**, welcomed a new addition on January 24, 2007. **Franklin Thomas Boykin** (6 lbs 15 oz) was delivered a few hours ahead of schedule.

Larry McKay took this picture of **Chuck McNulty (B.S. 2000)** with his wife, **Sabine** and son, **Devon**.

TENNMAPS 2007

For the second summer in a row, **Dr. Mike Clark,** with the help of **Bill Deane**, **Dr. Michael Gibson**, **Dr. Hugh Mills** and other, taught an outreach course in geology for 40 upper East Tennessee 5th -12th grade science teachers.

GEOCLUB NEWS – Melissa Hage

As usual, it has been another busy year for the students of EPS. It was sad to see those that graduated leave, but the addition of new graduate students and undergraduate majors was, as always, exciting. We are all so proud of the recent graduates that have gone on to pursue degrees or post-docs here at UT or elsewhere, and those that have joined the work force by getting jobs in the oil industry and environmental consulting. We are also keeping our fingers crossed for those students that will be graduating this year and are currently applying for jobs.

The Geological Society of American (GSA) national meeting was in Denver this year and the EPS department was well represented. We had numerous graduate students presenting posters and giving talks and they all did a great job. There was also a good showing of undergraduates that attended GSA for the first time to look at potential graduate schools and be exposed to cutting edge research in geology.

GeoClub started off the semester with a bang by organizing a camping and rafting trip down the Pigeon River that many graduate and undergraduate students attended. The Fall Party was hosted by Larry McKay this year and was a huge success. We've continued the tradition started last year of having monthly pot-luck dinners hosted by graduate students with different themes. The first one was a UT tailgate themed party, where we all got together to watch the UT vs Florida game. There has also been a German Oktoberfest party and an awesome Halloween party where students dressed like faculty and faculty dressed like students. As the year continues, GeoClub is hoping to organize more trips, including going caving, camping, and hiking, and a possible trip to Washington, D.C. to take advantage of our connections at the Smithsonian.

The GeoClub website has gotten a facelift this year, thanks to the undergraduate GeoClub president, **Steven Jaret**. Be sure to check out the website

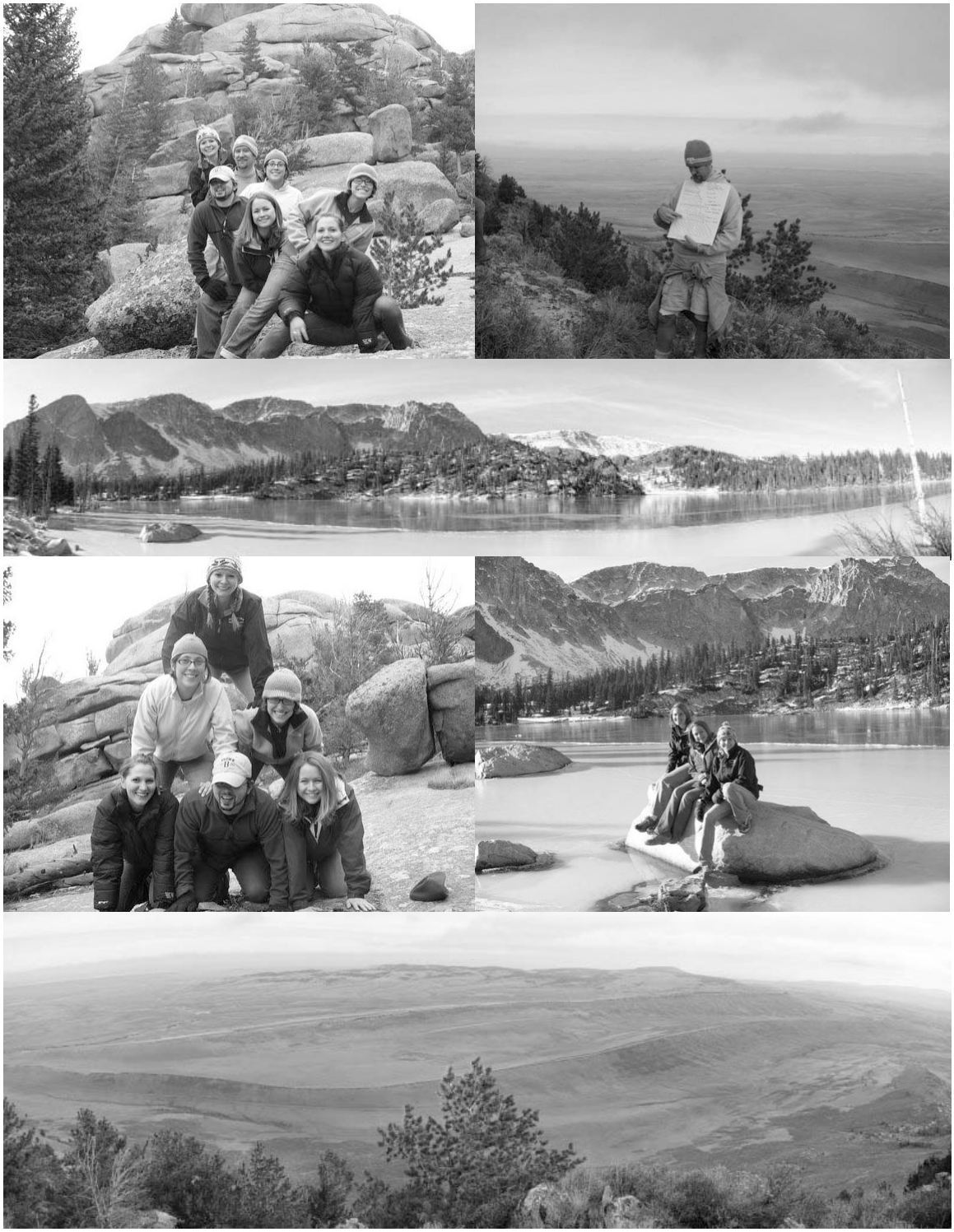
http://web.utk.edu/~geoclub/

often to get information about current students and current GeoClub activities, as well as to see photos from some of our latest events.

Along with having fun, the students of EPS have been very involved with community outreach this year. The Earth Science Fair was bigger and better than ever, with many graduate and undergraduates volunteering to help out. McClung Museum also keeps all of us very busy, with many sessions each week designed to open the eyes of local 3rd, 4th, 5th, and 6th graders to the wonderful world of geology.

FALL 2007 EPS PARTY AT LARRY MCKAY'S
- Photos by Karina Cheung and Bill Deane

THE ROAD TO GSA – Megan Carr



Dr. Greg Baker, **Megan Carr**, **Sarah Richards**, **Megan Smith**, **Stephanie Nicolls**, **John Roelfs** and **Aubrey Modi** went to GSA the fun way by driving. The snowy pictures are at Medicine Bow State Park in Wyoming and the other are near Laramie. Photos by Sarah, Stephanie and Dr. Baker.

ANNUAL GSA ALUMNI GATHERING – Ted Labotka

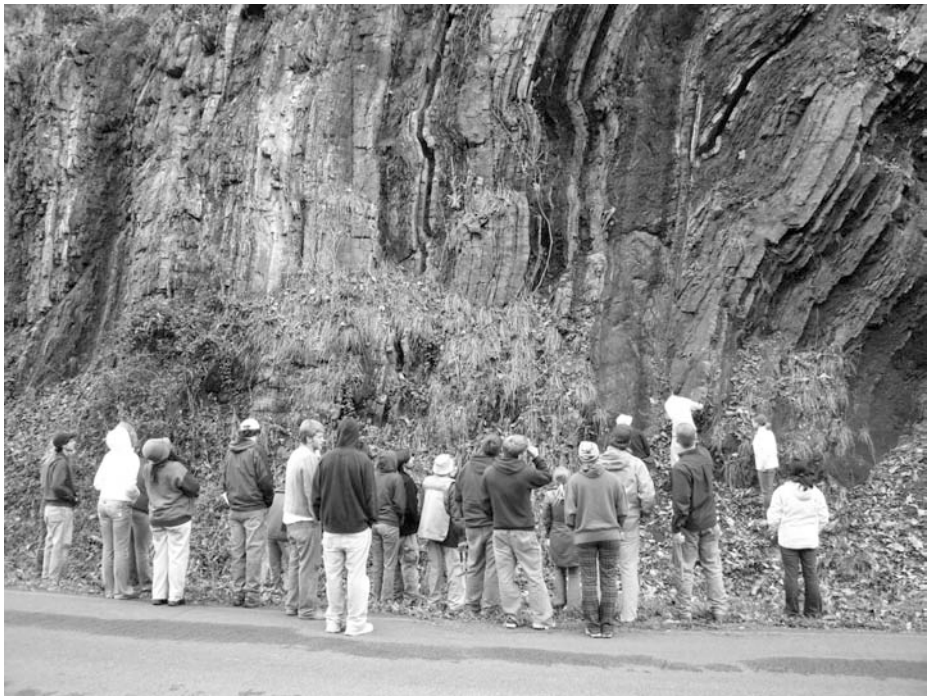
The Geological Society of America held its annual meeting in Denver in October. Several alums, friends, and former faculty joined us on October 29th for a reunion. We're pleased to see so many friends and to catch up with them about their jobs and family. We hope to see many of them again and others next year when the Society will meet in Houston in early October.

Those who signed our guest book are:

Axness, Marlene
Baca, Robert
Baldauf, Paul
Bream, Brendan
Brown, Summer
Byerly, Don
Connelly, Jeff
Davis, Edward
Dexter, Troy
Driese, Steve
Dunagan, Stan
Dunkinson, Ed
Fayek, Mostafa
Frederick, Daniel
Gibson, Michael
Giorgis, Scott
Goodman, Emily (and Madeline)
Hopkins, Samantha
Huebner, Matt
McClellen, Beth
Miller, Dana
Modi, Aubrey
Reynolds, Valerie
Richards, Sarah
Sharp, Jason
Smart, Kevin
Stiles, Cindy
Sutton, Tom
Thigpen, Ryan
Wainwright, Daniel

We welcome all alumni and their families to these too few and far between gatherings. It is great to catch up, learn the news and gain your valuable input into current department activities.

DO YOU REMEMBER MOORE'S GAP?



AWARDS DAY 2007

As usual, this year's Awards Day made everyone realize how professional and productive our students are. Sixteen students were recognized for publishing peer-reviewed papers in professional journals. An astounding fifty-two presentations at professional meetings listed our students as authors, and **Tabbatha Cavendish's** presentation won an award as best poster. Six students received competitive awards from various professional societies to support their research and travel.

The total monetary value of awards presented to students at this year's Awards Day was $34,600!

Undergraduate Awards

The Department presented seven Walls Awards to students showing exceptional promise in introductory geology courses. These awards are an unabashed attempt to attract the best students into the major. Two McLaughlin Awards and two Alumni Undergraduate Achievement Awards recognized academic success among our undergraduate majors. Again this year, the Knoxville Gem and Mineral Society generously presented three KGEMS Awards to students for their performance in mineralogy. The Outstanding Senior Award was presented to **Brooke Perini**.

Undergraduates also received a total of seven field camp scholarships from KGEMS, the Jones Field Scholarship Fund, and the Byerly Field Scholarship Fund. These funds will be augmented next year through a very generous gift from alumnus William Ross.

Graduate Awards

As part of our graduate program, we offer a course in how to make an effective oral presentation and prepare visual aids; these students then make short presentations as part of our Department seminar series. Three graduate students were recognized for best presentations. KGEMS also recognized two outstanding students, and the Planetary Geoscience Institute recognized six students for their research in that area. Four graduate students received awards for excellent in laboratory teaching, four were recognized for their outreach activities, and three were recognized for excellence in graduate coursework.

Two students were also awarded Swingle Graduate Fellowships for Outstanding Fieldwork, and two other students were recognized for excellence in research. Finally, the Gordon Award for Exceptional Professional Promise was given to doctoral student **Whitney Kocis**.

Faculty Awards

Hap McSween was selected by students as the GeoClub's Best Teacher, and **Colin Sumrall** received the Hall Professorship for his service to the Department.

AWARDEE COMMENTS

Meagan Smith
"I used the money from the KGEMS Undergraduate Award to buy a sleeping bag for the mini-term New England fieldtrip and put some away for field camp next summer."

David Gaines
"The Don Byerly Field Camp Scholarship afforded me the opportunity to further my geologic education in the Northern Rocky Mountains, which provided a context for previous coursework and future education."

Andrew Beck
"I was honored to have received the KGEMS Outstanding Graduate Award. This award has aided me in field studies and helped me attend prestigious conferences, such as the Meteoritical Society Meeting in Tucson."

Steven Jaret
"As one of the McLaughlin Undergraduate Award recipients, I greatly appreciate the support of past UT graduates. This award went a long way towards helping me offset the tuition costs of last May's mini-term field course in New England."

Mary Varnell
"I used the Excellence in Teaching Award money to help pay for travel to do some geochronology work at the USGS/Standford SHRIMP lab in California."

MICHAEL GIBSON AWARDED 2007 NEIL MINER AWARD BY NAGT

Each year, the National Association of Geoscience Teachers (NAGT) presents the Neil Miner Award to an individual for exceptional contributions to the stimulation of interest in the earth sciences. This year, it was awarded to **Michael Gibson (Ph.D. 1988)** and the announcement by NAGT reads:

"Michael A. Gibson received his B.S. in Geology from the College of William and Mary in 1979, his M.S. in Geology from Auburn University in 1983. Upon completion of his M.S. Gibson served as an instructor at Auburn for the 1983 academic year. He then moved to the University of Tennessee, Knoxville where he obtained his Ph.D. in Geology in 1988. Since 1988 he has been on faculty at the University of Tennessee at Martin, currently holding the rank of Full Professor. He is an Associate Curator for the Pink Palace Museum & Coon Creek Science Center.

Gibson was the 2003 Higher Education Science Teacher of the Year and the 2006 Distinguished Educator of the year for the Tennessee Science Teachers Association. Gibson has served as Southeastern President of NAGT (2000-2003); Councilor-at-Large on the NAGT Executive Committee (2003-2006) and helped to pen the NAGT position statement on teaching evolution. He was Secretary (1989-1994) and President (1994-1996) of the Southeastern Section of the Paleontological Society and currently serves on the PS Executive Council as National Chair of Education. Additionally he has served as the Southeastern Section Education Coordinator (2003-2005) for GSA; and is the Geology Editor for the Journal of the Tennessee Academy of Science.

Gibson was instrumental in Tennessee establishing the Cretaceous bivalve Pterotrigonia (Scabrotrigonia) thoracica as the Official State Fossil of Tennessee in 1998. He helped to found the Tennessee Earth Science Teachers (TEST) and serves as one of their higher education advisors. Gibson routinely runs development programs and field trips for Tennessee educators and serves on several State of Tennessee Department of Education committees, including the committee writing the state science standards. Gibson pioneered a dual credit geology course for high schools and teaches this course yearly at Westview High School in Martin, TN.

Gibson has published over 75 articles and is currently working on a book about Tennessee's state fossil.

Gibson's research includes: 1) Silurian - Devonian paleoecology and taphonomy; 2) Paleoecology of the Late Cretaceous of the Mississippi Embayment; 3) Floral paleoecology of the Claiborne Formation of West Tennessee; and 4) Geology and paleontology of Belize, Central America."

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Zhengu-Hua Li	Senior Research Associate
Robert Riding	Research Professor
Amitabha Ghosh	Research Assist Professor

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Yang Liu
Amit Basu Sarbadhikari
Tomohiro Usui
Elmer Van Den Berg
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