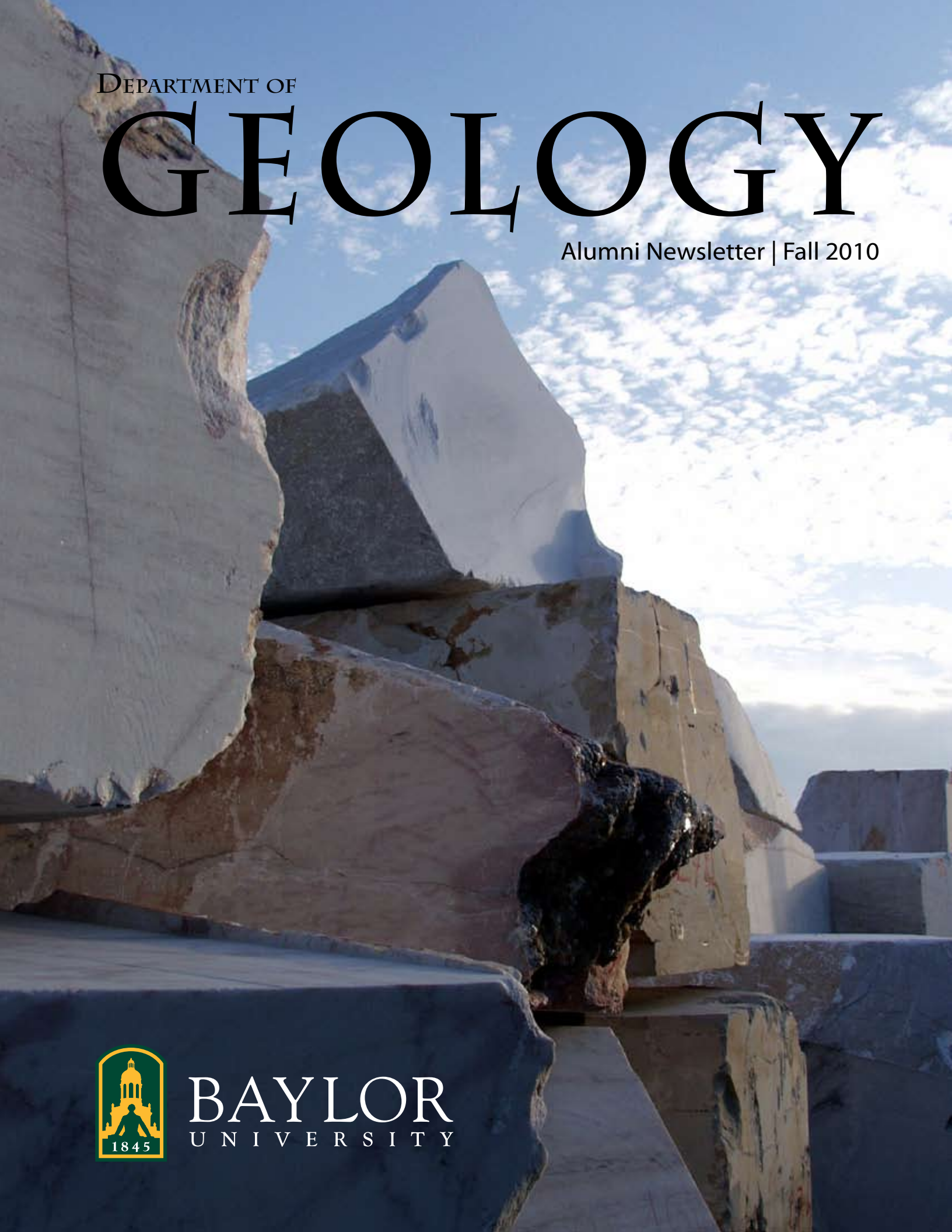

Department of

GEOLOGY

Alumni Newsletter | Fall 2010

BAYLOR UNIVERSITY

BAYLOR UNIVERSITY

DEPARTMENT OF GEOLOGY

Dr. Steven G. Driese,
Chairman

August, 2010

Dear Alumni and Friends of Baylor Geology:

Thanks to all of you for your continued support of the Geology Department! With generous financial support of dedicated alumni such as you we can do so much more for our students and faculty than if we only relied on Baylor University's base support. Several feature articles in this newsletter document the special ways in which your gifts touch our students. Several new scholarship endowments have been established – thanks so much!

While many public universities nationally are experiencing drastic budget cuts, involuntary furloughs, and even layoffs, related to the economic downturn, Baylor Geology continues to grow in size of our faculty, thanks to our association with three major strategic proposals funded by Baylor University. With the addition of Dr. William C. (Bill) Hockaday this August as a new Assistant Professor of Geology, we are now 16 faculty members, and anticipate 2 additional future hires in the next 2 years in paleoclimate modeling and water-related research. Dr. Hockaday is an organic geochemist and will be designing a new laboratory utilizing nuclear magnetic resonance (NMR) spectroscopy to characterize sources of organic matter, assisted with a very generous gift from Ken and Celia Carlile. This year we also hired Dr. Ren Zhang as our instrumentation specialist managing our new stable isotope laboratory. Dr. Zhang is our first technical support staff person supported by Baylor University and dedicated solely to the Geology Department. Dr. Dan Peppe's new Thomas T. Goforth Paleomagnetism Laboratory was completed and should be up and running once the magnetometer is delivered (featured in this newsletter).

Our undergraduate program continues to grow to about 60 majors, the majority of which are in the B.S. Geology track. There are now 4 students in the B.S. Geophysics track, which Drs. Dunbar and Pulliam have been active in trying to grow. The graduate program has grown to 26 students, with about 50% Ph.D. and 50% M.S. students. Our students continue to be employed primarily in the energy industry, and in environmental and engineering geology, and hydrogeology. We are seeing growing numbers of undergraduates entering Baylor University and declaring geology as their major, which is a very positive sign. The Baylor Geological Society (BGS) and the Baylor Geology American Association of Petroleum Geologists (AAPG) Student Chapter were very active under the leadership of Head Clod Gary Stinchcomb.

The Baylor Geology Advisory Board, chaired by Robert Springer, with Jim Bain as Vice Chair and Josh Talbert as Secretary, have been very active in seeking ways in which Board members can work with the Department and the Baylor Development Office to identify specific needs and to initiate and conduct special fund-raising projects. In the accompanying letter Board Chair Springer highlights their current activities.

Letter from Dr. Driese, continued...

Finally, I will conclude by saying that it has been both a rewarding and (at times) a tiring experience serving as Department Chair the past 6 years. This fall semester of 2010 I have been granted a research sabbatical by Baylor University and look forward to having time to catch up on working on funded research and lead an SEPM international research conference on paleosols at Petrified Forest National Park in Arizona in September. While I am hiding out during the fall Dr. Stacy Atchley will be serving as acting Chair, for which I am very grateful.

Please be sure to attend our Baylor Geology Homecoming Event from 7:00-9:00 p.m. on October 22, 2010 in the areas outside the 4th floor elevators of the Baylor Sciences Building – we hope to see you all there!

Best wishes,

Dr. Steven G. Driese
Chairman

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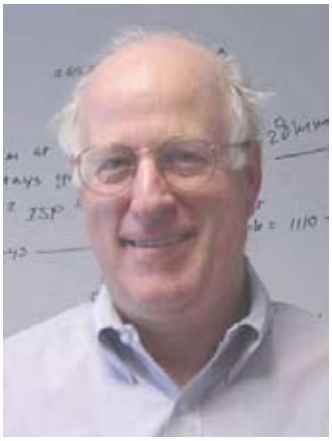
Points of Interest

FROM THE PROFESSORS

Dr. Peter Allen



Another year of surprises or is my memory going… Anyhow, got Matt Schriener graduated with his MA degree and he is now employed at Exxon with a lot of other ex's. Matt did some interesting work on assessing the ability of lidar and GIS to delineate stream setbacks for erosion control in urban watersheds. Joseph Sang, my PhD. student is making progress in his research on evaluating erodibilty and sedimentation processes. Joseph, a teacher at the Jomo Kenyatta University in Kenya is working toward his PhD and will be going back to Kenya to establish a Reservoir Sedimentation and Watershed Modeling Research Center for Africa.

On the research front I continue to work with Jeff Arnold and others at the USDA/ARS on new concepts of the SWAT model. This model, developed primarily by the research hydrologists in Temple, is now used worldwide. Over 650 peer reviewed articles have been written on applications of the model worldwide. **SWAT** (Soil Water Assessment Tool) is an hydrology model with the following components: Weather, surface runoff, return flow, percolation, evapotranspiration, transmission losses, pond and reservoir storage, crop growth and irrigation, groundwater flow, reach routing, nutrient and pesticide loading, water transfer. SWAT can be considered a watershed hydrological transport model. Right now we are working on a new way to allow SWAT, which is a basin scale model to better handle small watershed processes using a new "flexible routing" scheme which should allow some better assessment of first order or small watershed processes.

In the fall John Dunbar and I went to Kansas City and gave two invited talks on procedures and problems with reservoir sedimentation estimates in large reservoirs as well as a talk on erosion rates during the 1950's drought. John was lead author on a paper we got accepted to Water Resources Research on the same topic. I was also involved with several students (who of course did all the work) on presentations at the GSA meeting in Portland where Stephanie Capello, and David Coffman gave presentations as did Joseph Sang. This spring I went to Costa Rica and gave a talk on the SWAT-DEG model at Earth University. This model assess the downcutting and erosion brought on with urbanization and allows engineers and planners to anticipate downstream impacts of urban development. Costa Rica is beautiful, and incredibly savvy on ecotourism with education on this latter subject being taught throughout the school system.

On the professional front, Jeff Arnold and I gave a short course on Stream Channel Assessment Techniques for Engineers and Planners to a group of about 30 at Halff Engineers in Dallas Texas. We also worked on two reports on urban stream channel assessment for various cities.

At school, I continue to teach hydrology and physical geology to wonderful students who enjoy the ever increasing demands I put on them so that they may compete in this increasingly competitive market. The highlight for me during this year was the first OT Hayward Lecture by Dr. Dave Montgomery on "Dirt." Alumni Connie Hudson and family, established this lectureship in OT's name. The second lecture has already been given and it appears as if this will be about once every semester…a wonderful addition to the University and especially the department to bring in world class speakers on a wide variety of geologic topics…a wish of OT's, granted by this wonderful family. My family continues to be spread around the West with Sarah and grandkids in Dallas, Maggie as a Nurse Practitioner in San Francisco, Annabel in Medical sales in Denver, and Peggy and I ever wandering between Dallas and Waco. My best to all. Hope to see you around here at Homecoming.

FROM THE PROFESSORS

Dr. Stacy Atchley

On the home-front:

It's a miracle! Our daughters are growing older, but Janelle and I aren't. My oldest daughter Dallas is now a senior in high school.... Unbelievable! Dallas has done remarkably well in her studies and both Janelle and I are very proud of her. In spite of my advocacy for Baylor, Dallas is eyeing a college experience elsewhere. She's still sifting through a maze of information on various schools so her top choice(s) are still up in the air. Although many school names have come and gone, those that are still on the radar include Tulane, Davidson, and the University of Virginia. A frequently-mentioned new arrival on her list is Pomona..... Vince Cronin would be proud. Our youngest daughter Audra is also a solid academic performer. Audra is now a 7th grader and in addition to her focused academic work is very active in sports. Audra particularly enjoys volleyball, but also excels in basketball and tennis. In tennis, Audra made it to the finals of her school's open tournament (i.e., including both boys and girls) championship. During the summer, Audra took her first solo airline trip to visit her grandparents in Lincoln, Nebraska. Although the grandparents are sympathetic to Baylor, they bleed Husker candy-apple red. We're hoping that Audra didn't drink too much Cornhusker kool-aid during the visit. Janelle still spends most of her time chasing Dallas and Audra from one activity to the next. In spite of this, Janelle manages to squeeze a few days a week working as an accounting assistant within the Department of Geology.....Janelle really enjoys her time on the job, and in particular, interacting with Paulette and Jamie Ruth.

On the teaching front:

I still offer the same gauntlet of courses, i.e., Historical Geology, undergraduate Sedimentology/ Stratigraphy, Depositional Systems, Petroleum Geology, and of course, Graduate Stratigraphy. In fact, I just returned last week from my 8th section of Graduate Stratigraphy. Amazingly, our class stumbled upon a camera lost by a former student (Carrie Wallestad) 6 years ago at Last Chance Canyon in the Guadalupe Mountains of west Texas. Unfortunately, the camera is in pretty bad shape having been exposed to the elements all this time.....including a forest fire (see photo to right). We're hoping that Carrie can salvage the SD card. If you recover any photos of our 2004 trip Carrie, please email them to me! I recently designed a new course, "Advanced Sequence Stratigrahic Concepts". It's going to be a theory-intensive course that includes many subsurface correlation exercises. The course should be great fun for all.

On the research front:

Steve Dworkin, Lee Nordt and myself FINALLY completed the field work for our description of the entire Late Triassic succession (Chinle Formation) exposed at Petrified Forest National Park. We now begin the "fun" part of synthesizing all of our data and reconstructing the long history of terrestrial deposition and climate change. We will be showcasing our work at an international paleosol field conference in September of 2010 that is sponsored by SEPM and organized by our own Steve Driese. I am also still very active within the Applied Petroleum Studies program. I'm kicking-off

Carrie Wallestad's camera from 2004

FROM THE PROFESSORS
Dr. Stacy Atchley (cont.)

a new project during Summer 2010 to study the Late Devonian Jean Marie Formation in northeastern British Columbia. The project is sponsored by Husky Energy of Calgary, Alberta, and will involve both Jason Mintz and Aislyn Trendell (current PhD students), and incoming M.S. students Curtis Barclay (B.S., Grand Valley State University, Michigan) and Kelly Jones (B.S., University of Southern Alabama). Jason and I will be visiting with representatives from Husky Energy during Summer 2010 to fully define the project, and then Jason and I will travel to Fort St. John, British Columbia for 10 days to describe core. This will be my highest latitude excursion to date.

On the student front:

I'm currently advising one PhD student (Aislyn Trendell) and one M.S. student (Ryan Dhillon). Aislyn is making great progress on her dissertation studying the Blue Mesa and Sonsela Members of the Chinle Formation at Petrified Forest National Park. We anticipate Aislyn being well on her way to completing her dissertation requirement by the end of the 2010-1011 academic year. Ryan Dhillon worked as a summer intern for Chesapeake Energy (Oklahoma City) during the Summer of 2010, and may turn some aspect of his summer internship into a thesis project. As mentioned above, I accepted two new students into the program (Curtis Barclay and Kelly Jones), and they will be working with me in British Columbia. Finally, Steve Dworkin and I will be co-advising incoming M.S. student Garrett Felda who comes to Baylor from the University of Wisconsin, Oshkosh.

FROM THE PROFESSORS
Dr. Rena Bonem

This has been a busy year for the department. The current count of undergraduate Geology, Geophysics, Geography and Earth Science majors is now at 62 and seems to be relatively stable. The incoming freshman class is eleven this year, though this number grows daily right now. I think there are about 53 undergraduates pursuing a B.S. in Geology which is down slightly while Earth Science still has one major. Geography and Geophysics are up slightly at 4 majors each. Major courses in paleontology and rocks and rock forming minerals have about 20 students each this fall. Due to the number of majors, Joe Yelderman is still helping out with advisement. The AGI recruitment packets have been a big hit this year with the 46 students who have received them.

Last year, I had almost 200 students each semester (World Oceans and Invertebrate Paleontology in the fall and World Oceans and Historical/Earth through Time in the spring). We saw a few of our former students at the GSA meeting Portland last fall (Paulette got to go and help with the booth which will give me time to be in GSA Foundation Development Committee meetings). We will be back in Denver this year and look forward to seeing those who attend that meeting. Adam Damman has switched his M.S. thesis to a project that will compare the layered structure of the Edwards Bioherms to the Bermuda patch reefs. His thesis work is being supported by grants from AAPG, the Dallas Paleontological Society, and the Bermuda Biological Station.

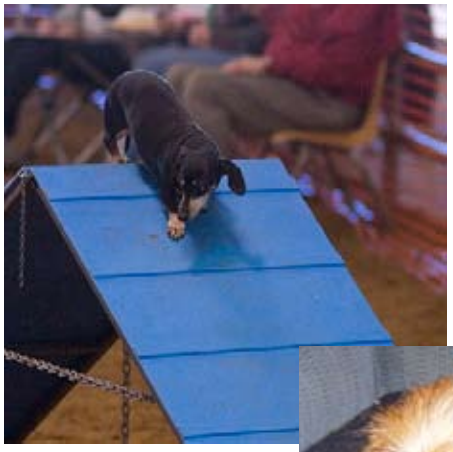
The record low water on the Paluxy River last year was replaced by catastrophic flooding on the river early this summer. In fact, the Campground Site

FROM THE PROFESSORS
Dr. Rena Bonem (cont.)

(Denio Branch) no longer has any tracks that can be observed. They have been stacked along the river as rubble. The freshman field trips this summer had to visit the old River Crossing site. Most of the students made it across, but there were a few who ended up as victims of high water moving rapidly over slick rocks.

On a personal note, I had arthroscopic knee surgery in March to repair torn meniscus which was the result of a fall on the banks of the Paluxy last summer. That has kept me from doing as much field work as last year. However, the knee is improving and I will be spending 2 weeks in Alaska with my brother and sister-in-law this summer. One of my older dogs passed away, Kibby, so I do have a new puppy to do agility with when my knee recovers completely.

As always, I look forward to seeing those who have not been around Baylor lately and hope that all of you will be able to come and visit us soon.



Tess, an agility dog

Brady, the new puppy

FROM THE PROFESSORS
Sharon Browning

This past year has seen lots of changes for me at Baylor. Our consolidated freshman labs start this fall, I am excited and looking forward to implementing these new changes. On a personal note, my daughter is now 13 and will be going into the 8th grade this year. I cannot believe how fast children grow! She already knows what kind of car she wants when she turns 16 (a black bug)! I continue to enjoy working at Baylor and look forward to what the future brings.

FROM THE PROFESSORS

Dr. Vince Cronin

My wife Cindy (Cindy Ellis, Baylor MS Geology in 1990) is still putting up with our family menagerie and me. We spend our time supporting our descendants and improving/maintaining our not-so-vast estate.

Our daughter Kelly graduated *summa cum laude* from Reicher Catholic High School in the top 10% of her class this spring. After visiting 29 colleges/universities, applying to several and rejected by none, she was accepted by Baylor, Trinity, Lawrence, UT-Austin, Mount Holyoke and Notre Dame. She attracted more than half a million dollars in merit scholarships (to schools she ultimately decided not to attend), and has joined the Class of 2014 at the University of Notre Dame. After 3 years of Latin in high school, Kelly is starting to learn Irish in anticipation of spending some time studying in Ireland in the future.

Our son Connor graduated from St. Louis School this spring, and will start at Reicher in the fall. His size-13 feet support a frame that is now taller than 5 feet 10 inches. Connor participates in soccer on both his school team and the HOT team he has played with for 8 years, as well as basketball, baseball (his Texas Teenage Baseball team is currently headed to the divisional playoffs), and he has resumed his interest in golf now that Reicher will have a golf team for 2010-2011. He would play lacrosse and hurling if there were opportunities to do so in central Texas, but alas, there are not. As I write this in late June, we are packing for a 9-day canoe trip in the Boundary Waters area along the Minnesota-Canada border, with the Boy Scouts. Connor has also taken-up unicycle riding.

A month or so ago, someone left a baby puppy in a cardboard box in the parking lot of the Central Texas Marketplace. Later that night, the little beast arrived at our house. The black-and-white Lab mix is named Monty, as in Monty Python, and has been pestering our black-and-white dog Sadie and our black-and-white cat Oreo ever since.

I am currently advising three MS students, all of whom should graduate in May of 2011. (Information about my current and past MS students at Baylor is posted at http://bearspace.baylor.edu/Vince_Cronin/www/GradStudents.html.) Stephen Secrest is working to understand a system of faults cutting Austin Chalk that are exposed in the walls of the Lehigh Quarry. He has been using climbing equipment (ropes, ascenders, descenders, etc.) to allow him to safely map the faults on the vertical quarry walls. Ryan Lindsay and Dan Lancaster are both using the Seismo-Lineament Analysis Method (SLAM; Cronin and others, 2008) to spatially correlate earthquakes with the surface trace of faults that are likely to have generated them. Ryan is working in the norther Lake Tahoe Basin of California and Nevada, where elevations to above 12,000 feet, forests, landslides/rockslides and Pleistocene glacial deposits place constraints on his field work. Dan is trying to identify the faults responsible for several of the largest earthquakes in Arizona history, working in the area north of the Grand Canyon. All will probably be presenting thesis results this fall at the GSA meeting in Denver, and perhaps at the AGU meeting in San Francisco, and all plan careers in the oil business.

As for me, well, I'm still here. Friends and former students can contact me at Vince_Cronin@baylor.edu or (254) 710-2174 to chat. I would like to hear what you are up to. My home page is http://bearspace.baylor.edu/Vince_Cronin/www/

Information for folks interested in pursuing an MS degree in structural geology with me is available at http://bearspace.baylor.edu/Vince_Cronin/www/Structure/index.html including my basic admission requirements listed at http://bearspace.baylor.edu/Vince_Cronin/www/MS_StructureGradStandards.html.

FROM THE PROFESSORS

Dr. Steve Driese

My second 3-year term as Chair is now over, and although it was my intention when I was hired to only serve two terms, this spring I was asked by the Baylor administration if I would continue serving as Chair of the Geology Department for one more term, which I have agreed to do. I find the Chair's job both challenging and very rewarding, especially in seeing the Department grow in size and improve in research productivity, as well as in training students. I coordinated the search for a new tenure-track faculty member in organic geochemistry, which was successful and resulted in the hire of Dr. Bill Hockaday. I also concluded my term as President of SEPM (the Society for Sedimentary Geology) at the April 2010 AAPG-SEPM Annual Meeting in New Orleans. The really big news is that I was granted a faculty research sabbatical for the fall semester of 2010, which will allow me time to manage three different research grants and an SEPM Paleosols Research Conference and Workshop in late September of 2010 at Petrified Forest National Park in Arizona, assisted by Baylor colleagues Stacy Atchley, Steve Dworkin, Dan Peppe and Lee Nordt. Stacy Atchley has kindly agreed to step in as interim Chair in my absence.

In the fall semester of 2009 I taught the GEO 5342 Micromorphology course to 3 students, and I also taught the graduate Seminar on Grant Proposal-Writing to 6 students. In the spring semester of 2009 I taught the GEO 43C1 Senior Capstone Colloquium course, which had 8 students, and each prepared a poster display for the annual Undergraduate Research Scholars Day (URSA) event held in the Ken and Celia Carlile Atrium of the Baylor Sciences Building.

I am currently supervising three Ph.D. students and three B.S. Senior Thesis students in residence at Baylor University. New Ph.D. student Lauren Michel joined Baylor in the fall of 2009 after completing her M.S. research at SMU. Lauren's research will be co-advised by me and Dan Peppe, and involves research on Vertisols at the Riesel, TX USDA-ARS site, and on Miocene paleosols at Rusinga Island in Kenya. In the summer of 2009 Lee Nordt and I visited Ph.D. student Gary Stinchcomb's dissertation research area in the upper Delaware Water Gap region in PA and NJ. Gary is integrating paleosol, geomorphic, and geoarchaeological approaches to reconstruct latest Pleistocene to Holocene climate change and land use in this region. Gary has one paper in review in which he proposes that agricultural practices of Native Americans actually impacted sedimentation rates before the arrival of European settlers. Ph.D. student Jason Mintz published his first paper in *PALAIOS* in 2010 on spatial analysis of Middle Devonian forests in upstate NY, and has a second paper in review on stable isotope geochemistry of Holocene pedogenic carbonates at Dance Bayou in Brazoria Co., TX. Colby Wright completed his B.S. Geology Senior Thesis investigations on quantifying pedogenic clays in Middle

Baylor Ph.D. student Gary Stinchcomb examining trench excavated in late Pleistocene to Holocene fluvial deposits along Delaware River in the Delaware Water Gap in PA during the summer of 2009. Gary and his wife Erin dug the pit by hand.

Devonian paleosols in the Catskill succession to estimate time duration of soil formation; Colby has headed to the University of Alaska-Fairbanks to start a Master's thesis in the fall of 2010. B.S. Geology student Hunter Harlow first served as a James W. Dixon Undergraduate Field Assistant in the summer of 2009 for Jason Mintz, and completed a Senior Thesis on the geochemistry and sequence stratigraphy of Middle Devonian fluvial deposits in upstate NY; Hunter has headed to the University of Kansas to start his Master's thesis in the fall of 2010. B.S. Geology Senior Thesis student Tyler Landers is currently investigating floodplain deposits at Williams Creek near Axtell, TX seeking evidence for changes in sedimentation associated with latest Holocene climate changes (Medieval Warm Period and Little Ice Age).

My own research continues to focus on interdisciplinary paleoclimate and paleolandscape reconstructions using fossil soils, or paleosols, as well as conducting studies of modern soil systems (especially Vertisols) to develop climate proxies and analogs of ancient soils. In 2009 I published 3 refereed journal articles and have 3 papers published in 2010. I presented 9 papers, as either an author or co-author, at various professional meetings. I continue working on an NSF grant proposal (with a University of Kansas-Kansas Geological Survey group) on paleoclimate reconstructions and modern calibrations using pedogenic sphaerosiderite, and also had 2 new NSF grant proposals funded in 2009. I continue to work on the paleoclimate records of late Quaternary floodplain soils in the southeastern US with two University of Tennessee-Knoxville colleagues, and I am serving on a Tennessee Ph.D. student's committee. Another collaborative project involves measurements of soil CO_2 in Vertisols in Texas to calibrate the soil carbonate paleobarometer for estimating pCO_2, with Lee Nordt and a University of Texas-Austin colleague. My paleoclimate studies of Olduvai Gorge (Tanzania) Quaternary paleosols continues in collaboration with Rutgers University, and I am serving on a Rutgers M.S. Thesis student's committee. Work continues on a collaborative project with Lee Nordt and two Texas A&M University colleagues on a pre-Clovis archaeological site near Salado, TX. I am also working with TAMU archaeologists on a Clovis site in central Alaska. Finally, my interests in Precambrian paleoweathering systems continues with a joint project with the Minnesota Geological Survey on a 2.7 Ga paleoweathering surface in northern MN, and includes Don Parker and collaborators at UT-El Paso and Idaho State University. I continue to serve my profession by reviewing submitted manuscripts for many of the sedimentary geology and soils journals, and am an Associate Editor for the journal *PALAIOS*.

My wife Marylaine and I enjoyed a 1-week vacation in June last summer to the beautiful southern beaches of Maine – although the weather was exceptionally cool and wet it was a great trip nevertheless. Sadly, Marylaine's father Ewing (Tex) Hight passed away in early December of 2009. Marylaine continues her part-time job as archivist for McLennan Community College, and is now the editor/publisher of the Quarterly Bulletin of the Central Texas Genealogical Society. Mary Catherine has graduated from Midway High School, and is excited about starting in the fall semester of 2010 as a freshman at UT-Austin. She plans to join the water polo club at UT to continue swimming, and is majoring in Latin American Studies. Our oldest son Nathan is writing his dissertation on Hume for the Ph.D. program in Philosophy at the University of Kansas. Our other son Trevor still lives in Knoxville and works for a mortgage company; he has recently become a new home-owner for the first time! Marylaine and I continue to be dedicated Lady Bears' basketball fans, though I also enjoy attending Baylor Men's basketball games as well. We also enjoy singing together at Sunday services with the chancel choir at First Presbyterian Church. During the summer of 2010 we plan to take a 2-week family trip to Italy, with visits to Rome, Florence and Naples, including Vesuvius and Pompeii!

Large petrified log near south Visitor's Center at Petrified Forest National Park in Holbrook, AZ, which will be the site of a Baylor-led SEPM Paleosols Research Conference and Workshop in September of 2010.

2009-2010 SEPM Council members, taken in Denver, CO. (From left, seated are: John Snedden, Mitch Harris, Steve Driese, and Nancy Engelhardt-Moore. From left, standing are: Evan Franseen, John Holbrook, Tim Carr, Gene Rankey, Steve Hasiotis, and Paul McCarthy.)

Journal Publications

Shunk, A.J., Driese, S.G., and Dunbar, J.A., 2009, Late Tertiary paleoclimatic interpretation from lacustrine rhythmites in the Gray Fossil Site, northeastern Tennessee, USA: Journal of Paleolimnology, v. 42, p. 11-24.

Shunk, A.J., Driese, S.G., Farlow, J.O., Zavada, M., and Zobaa, M.K., 2009, Late Neogene paleoclimate and paleoenvironment reconstructions from the Pipe Creek Sinkhole, Indiana, USA: Palaeogeography, Palaeoclimatology, Palaeoecology, v. 274, p. 173-184.

Nordt, L.C., and Driese, S.G., 2009 Hydropedological assessment of a Vertisol climosequence on the Gulf Coast Prairie Land Resource Area of Texas: Hydrology and Earth System Science Discussions, v. 6, p. 3637–3668, www.hydrol-earth-syst-sci-discuss.net/6/3637/2009/

Mintz, J.S., Driese, S.G., and White, J.D., 2010, Environmental and ecological variability of Middle Devonian (Givetian) forests in Appalachian basin paleosols, New York, USA: PALAIOS, v. 25, p. 85-96.

Nordt. L.C., and Driese, S.G., 2010, A modern soil characterization approach to reconstructing physical and chemical properties of paleo-Vertisols: American Journal of Science, v. 310, p. 37-64.

Nordt, L.C., and Driese, S.G., 2010, New weathering index for improves paleorainfall estimates from Vertisols: Geology, v. 38, p. 407-410.

Presentations

Mintz, J.S., Driese, S.G., and White, J.D., 2009, Environmental and ecological variability of Middle Devonian (Givetian) forested paleosols in the Catskill region, Appalachian basin, New York: presented at Northeastern section GSA meeting in Portland, ME.

Sankey, J.T., Atchley, S.C., Nordt, L.C., Driese, S.G., Dworkin, S.I., Longrich, N., Fricke, H. 2009, A less diverse Late Cretaceous vertebrate fauna in Texas due to warmer and drier paleoclimates: evidence from vertebrates, paleosols, and isotopes: Advances in Western Interior Late Cretaceous Paleontology and Geology, Abstracts with Program, p. 43. May 22-23, 2009. St. George, Utah.

Dr. Steve Driese (cont.)

Presentations (cont.)

Jirsa, M.A., and Driese, S.G., 2009, Neoarchean weathering and atmospheric pO2 inferred from a paleosaprolitic unconformity between granite-greenstone and superjacent conglomerate in the Boundary Waters Canoe Area, NE Minnesota: 55th Annual Institute for Lake Superior Geology meeting in Ely, MN, May 2009.

Messner, T.C., Stinchcomb, G., Stewart, M., and Driese, S.G., 2009, Layer upon layer of late Woodland: Reconstructing the paleoenvironment and its relationship to landform evolution in the upper Delaware Valley: presented at Society of American Archaeologists Annual Meeting, Atlanta, GA.

Driese, S.G., Ludvigson, G.A., Roberts, J.A., Fowle, D., González, L.A., McKay, L.D., and Vulava, V.M., 2009, Formation of historical pedogenic siderite in PAH-contaminated alluvial clay soils, Tennessee, USA: Part I: Insights from field relationships and micromorphology: presented at GSA Annual Meeting in Portland, OR, October 2009.

Ludvigson, G.A., Driese, S.G., Smith, J.J., González, L.A., Roberts, J.A., Fowle, D., McKay, L.D., and Vulava, V.., 2009, Formation of historical pedogenic siderite in PAH-contaminated alluvial clay soils, Tennessee, USA: Part II: Stable isotopic data on modern analogue for a deep-time paleoclimate proxy: presented at GSA Annual Meeting in Portland, OR, October 2009.

Mintz, J.S., Driese, S.G., and Ludvigson, G.A., 2009, Seasonal influence of changing hydrology on pedogenic carbonate formation in Vertisols, Dance Bayou, Brazoria County, TX: Implications for quantification of past atmospheric pCO2: presented at GSA Annual Meeting in Portland, OR, October 2009.

Stinchcomb, G.S., Messner, T., Driese, S.G., Nordt, L.C., and Stewart, R.M., 2009, Floodplain response to Late Holocene climate change and human land-use at the manna Site (36PI04), Upper Delaware Valley, PA: presented at GSA Annual Meeting in Portland, OR, October 2009.

Wright, T.C., Mintz, J.S., and Driese, S.G., 2009, Estimating Middle Devonian soil ages using point-counting of pedogenic clays in paleosols: presented at GSA Annual Meeting in Portland, OR, October 2009.

FROM THE PROFESSORS

Dr. John Dunbar

This past summer John Dunbar along with undergraduate Jon Brown went on a geophysical version of the great American road trip. As part of a larger study of the deep crustal structure beneath the Texas Gulf Coast with Jay Pulliam, John and Jon collected gravity and magnetic data along a profile extending from Matagorda Island, through Victoria, San Marcos, and Johnson City, a distance of 300 km. Their purpose was to better constrain the location and nature of the contact between extended continental crust and oceanic crust that marked the initial opening of the Gulf of Mexico and the beginning of the breakup of Pangaea.

In other work, John is reconfiguring his seafloor electrical resistivity system of a high-resolution 3D resistivity survey of Mississippi Canyon Block 118. In a reconnaissance resistivity survey of the block in summer 2009, John found 100 Ohm-m resistivity anomalies along the seafloor trace of deep-seated normal faults, indicative of massive methane hydrate deposits. In John's current work

Dr. John Dunbar (cont.)

his is building a shorter, higher-resolution electrode array for the seafloor system and adding acoustic transponders to track is position during seafloor surveys. John hopes to return to MC118 in 2010-2011 to conduct a more detail survey, which will map the 3D distribution of methane hydrates at the site.

On the home front, daughter Tamura is a senior at Vanguard College Preparatory School. In the summer, she attended the Sewanee Environmental Institute's 2010 Pre-College Field Studies Experience. She was at Sewanee (the University of the South) for two weeks in late June and Early July. Despite hearing her father's laments about the perils of fieldwork, she has decided she wants to be a field biologist! And of course, she will apply to Baylor, but somehow other colleges (as in a college which does not employ your dad) seem more enticing at this time.

John's wife Anna continues to work as the Regional Director of the Texas Commission on Environmental Quality Waco regional office. The challenges in the past year have been varied (e.g. poultry farms and power plants) and numerous. In the past year the water rights issues in the Brazos basin have gotten increasing attention and that may be a challenge for the Waco office in the future.

This past summer John Dunbar along with undergraduate Jon Brown went on a geophysical version of the great American road trip.

FROM THE PROFESSORS

Dr. Steve Dworkin

The stable isotope mass spectrometer laboratory is now fully functional and the new lab manager (Ren Zhang) has been measuring stable isotope ratios for the last two weeks. This lab will provide tons of data for the geology department, but will also be utilized heavily by the Biology and Environmental Science departments.

Stephen Clark graduated this past year after studying the isotopic composition of organic matter in the Cretaceous units of central Texas. Will Torsch concluded his senior thesis this year in which he investigated the abundance of calcite and organic matter in Quaternary paleosols from Fort Hood. My one graduate student, Scott Douglas, is studying Norphlet sandstones from the deep Gulf of Mexico.

Dr. Steve Dworkin (cont.)

I am working on the geochemistry and petrology of Chinle sandstones and mudrocks. We made an ill-fated trip out to Petrified Forest this past spring break to continue our field work on the Chinle. Sandy and I pulled our travel trailer to the park but we only made it as far as Santa Rosa, New Mexico before we broke down for four days. In the meantime, the rest of the crew (Stacy Atchley, Lee Nordt, and Steve Driese pictured below) made it to the park only to be frozen half to death by cold weather and strong winds. The trip was quickly canceled and I never made it to the field area. We went out again at the end of the Spring semester and this time we got in a week of field work (see photo of one of our 15 mile hikes) and we have essentially finished the field work part of this project.

Sandy and I are staying busy. We went skiing over the winter break but we probably won't go again for a while until Sandy recovers from her knee replacement that is scheduled for the middle of July. Because her knee is in such bad shape, Sandy will not be going to field camp with me this summer. This will be the first year Sandy hasn't gone to field camp with me since we got married 11 years ago and the students are dreading it because she is the only reason that we stop for showers.

FROM THE PROFESSORS

Dr. Don Greene

While Don expected his community service with the Texas Department of Transportation to be a two year obligation, he is still engaged with plans for expansion of the I-35 corridor. The corridor is divided into "segments" defined by county boundaries. The segment of greatest urgency for 3-lane expansion is found in central Texas, and extends through Hill, McLennan, and Bell counties. Bridge flyovers are currently the areas of active construction in all three counties, and require a multi-year time frame for completion. For example, Waco has been patiently waiting for completion of the "High 4" flyover at the intersection of Highway 6 and I-35. Although Don's active involvement is winding down, he still participates in planning meetings among civic groups and local city planners.

Our Geography program may be on the road to recovery with more activity in future semesters. Currently, the program suffers from our inability to offer the required coursework for a viable degree. Despite this lack of course offering, we are witness to an increase in student enrollments. Two of our newest students have a military background, and are seeking the applied coursework in remote sensing as well as Geographic Information Systems. It is also unclear at this writing the direction that Baylor President Kenneth Starr will pursue during his tenure. First evidence suggests at least a partial return by Baylor to a re-emphasis on undergraduate education. Regardless, the Geology Department is well equipped to handle any new emphasis requested by our new Administration.

Dr. Don Greene (cont.)

Don's wife, Alison, is officially retired from Family and Consumer Sciences. Nevertheless she cannot entirely stay away from a program to which she devoted 22 years of her life. For this reason, she volunteers her time as an uncompensated teaching assistant for several classes in clothing design and construction. Our daughter, Meredith, is constantly busy with a full-time career in urban planning while rearing twin 3 year olds. The accompanying photograph shows our double set of twins: 2 grandmothers and 2 granddaughters, with Alison on the right. Adriel, our youngest daughter, completed her master's degree in Museum Studies this spring and will start her doctorate in the fall.

How do you mend a broken heart from the loss of a son? In remembrance of a last conversation with James, Don has dedicated his spare time during the past two years for the construction of a floating dock on the family farm. Including design elements suggested by James, this may well be the one-and-only round dock topped by a gazebo in existence. The family photographs were taken on Independence Day 2010.

FROM THE PROFESSORS

Dr. William (Bill) Hockaday

Introduction

I am very excited to be joining the Baylor geology department this autumn, and look forward to teaching and research in the area of organic geochemistry. I am coming to Baylor after doctoral studies in chemistry at Ohio State University and a post-doctoral fellowship in Earth science at Rice University. I am accompanied by my wife, Mary, who will be teaching 4th grade at Mountainview elementary school in the Waco school district. Mary and I recently purchased our first home together in Robinson, and we look forward to becoming part of the Baylor community. Mary and I enjoy sports and the outdoors. You are likely to find us supporting the Bears at various athletic events.

Dr. William Hockaday (cont.)

Research Interests

I have a wide range of research interests and I can't wait to collaborate on research projects with many new colleagues at Baylor. I am actively conducting research on: climate change and land-use impacts on terrestrial carbon cycling, soil carbon sequestration, biofuels and bio-energy, molecular-level characterization of humic substances, and novel methods for measuring thermal maturity of kerogens and charcoals.

New Organic Geochemistry Lab Construction

My research relies heavily on molecular spectroscopy, and I am truly excited about building the first solid-state nuclear magnetic resonance (NMR) spectroscopy lab at Baylor University. I owe special thanks to Baylor alum Ken Carlile for his generous donation to assist with the purchase of this equipment. To the best of my knowledge, the geology department at Baylor will be the first in the country to have an NMR facility dedicated primarily to the study of geologic materials. NMR is a very powerful new tool in organic geochemistry and mineralogy, providing molecular structure information about the organic molecules and minerals in soils, sediments, and biological samples.

Ongoing Research

I have a longstanding research interest in the many impacts that wildfires have on Earth system processes. Most recently, I have begun to develop a new, more accurate proxy for the intensity of historic wildfires. Intense wildfires are thought responsible for the rise and fall of new biomes. I plan to test this hypothesis by measuring the temperature of the wildfires at the time of major evolutionary events.

This year I will continue two studies on carbon cycling in ecosystems exposed to elevated atmospheric carbon dioxide (CO_2) concentrations. I have completed one case study in a hardwood forest at the Oak Ridge Free-Air CO_2 Enrichment site in Tennessee, and will submit a manuscript this fall. We are still collecting data at the CO_2 tunnel at the USDA

Bill and Mary Hockaday after a long day of backpacking in the Grand Canyon. Photo taken on Plateau point, November 24, 2009.

grassland research station in Temple, TX. Some very exciting results are beginning to emerge. It is very interesting to see how differently forest and grassland ecosystems are responding to changes in atmospheric CO_2 concentration.

I am also currently working on my first NSF-funded grant to quantify and model the impacts of changes in land-use on the quantity and quality of carbon delivery to the ocean by rivers in the developing world. This study is being conducted on 4 watersheds in Venezuela with collaborators Tibisay Perez at IVIC in Caracas, and Caroline Masiello at Rice University. Below are my research accomplishments for 2009 – 2010 academic year.

Conferences Presentations

W. Hockaday, M. Gallagher, C. Masiello, J. Baldock, C. Iversen, R. Norby, Elevated atmospheric carbon dioxide alters soil biochemical stocks, Goldschmidt, June 2010, *Poster.*

W. Hockaday, Y.-S. Hwang, Q. Li, C. Masiello, Mass spectrometry of non-colloidal fullerenes in water containing natural organic matter, American Chemical Society, San Francisco, CA, March 2010, *talk.*

W. Hockaday, P. Hatcher, C. Masiello, L. Pyle, S. Kim, Comparing molecular structures of black carbon in soil and water to constrain processes of formation and decomposition, American Chemical Society, San Francisco, CA, March 2010, *Invited talk.*

W. Hockaday, P. Hatcher, J. Purcell, A. Marshall, Q. Li, C. Masiello, Fourier transform mass spectrometry for the study of organic matter molecular dynamics in aquatic ecosystems, Ecological Society of America, Albuquerque, NM, August 9 - 15, 2009, *Invited talk.*

Published Papers

F.-W. Zeng, C. Masiello, **W. Hockaday**, Controls on the cycling of dissolved inorganic carbon in the Brazos River, Texas, *Biogeochemistry,* Published online July 23, 2010, Doi: 10.1007/s10533-010-9501-y.

B. Nguyen, J. Lehmann, S. Joseph, **W. Hockaday,** C. Masiello, Temperature sensitivity of black carbon decomposition, *Environmental Science & Technology,* 44, 3324-3331, 2010.

E. Kane, **W. Hockaday***, C. Masiello, M. Turetsky, The carbon legacy of wildfires in Alaskan Boreal forest: controls on soil organic matter composition and black carbon stocks. *Biogeochemistry,* Published online Feb. 5, 2010. Doi: 10.1007/s10533-009-9403-z. * Kane and Hockaday contributed equally to this manuscript

K. Schreiner, T. Filley, R. Blanchette, B. Bowen, R. Bolskar, **W. Hockaday,** and C. Masiello, White rot basidomycete-mediated decomposition of C60 fullerol, *Environmental Science &Technology*, 43, 3162-3168, 2009.

W. Hockaday, C. Masiello, R. Smernik, J. Baldock, O. Chadwick, and J. Harden, The measurement of soil carbon oxidation state by 13C nuclear magnetic resonance, *Journal of Geophysical Research-Biogeosciences*, 114, G02014, doi.10.1029/2008jg000803, May 2009.

Papers in Review

M. Gallagher, **W. Hockaday,** C. Masiello, S. Snapp, C. McSweeney, J. Baldock, Optimizing nitrogen fertilization for corn cellulosic ethanol production, *Environmental Science & Technology.*

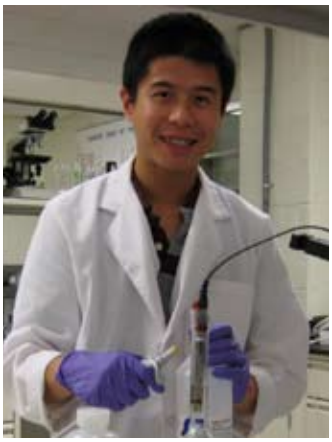
Reports

W. Hockaday, Y.-S. Hwang, Q. Li, C. Masiello, Monitoring engineered carbon nanoparticles in the environments, Report for the Shell Center for Sustainability, September 2009.

C. Masiello, **W. Hockaday**, K. Zygourakis, Carbon sequestration through bio-char soil amendment, Report for the Shell Center for Sustainability, Feb. 2010.

FROM THE PROFESSORS

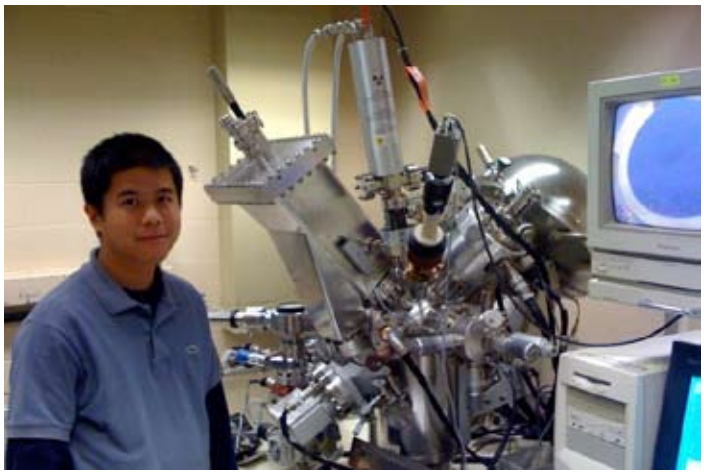
Dr. Boris Lau



Time flies! It definitely feels like two or three months ago that I wrote the last newsletter. It has been a productive year with substantial progress in establishing my independent research program and developing teaching materials. Among all the exciting things happened last year, I would like to share with you about my trip to the University of Oklahoma.

Thanks to the support from the Office of Vice Provost for Research, I spent part of December as a Big 12 faculty fellow working with another early-career scientist – Andy Madden. Andy and I share the same passion of studying nano-scale processes on mineral surfaces. During my visit, the exchange of expertise provided synergy to our ongoing research. With our mutual research interests in mind, this fellowship served as a starting point and created leverage for long term collaborations between OU and Baylor.

I also want to take this opportunity to get you interested in nanogeoscience! What? Nanogeoscience? Is it just a word make up by Boris?



Dr. Lau in front of a x-ray photoelectron spectrometer

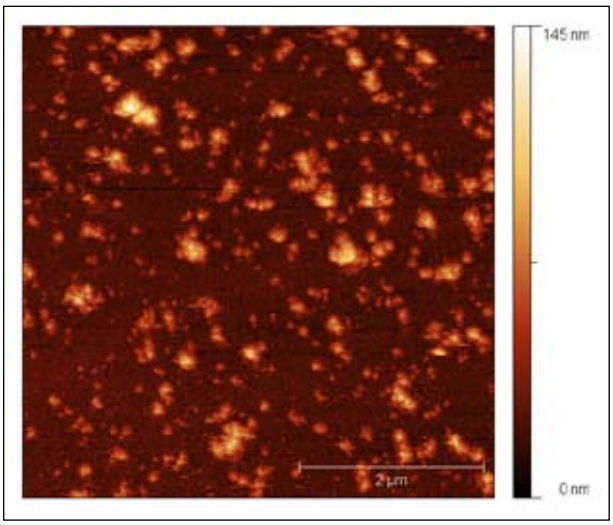
FROM THE PROFESSORS
Dr. Boris Lau (cont.)

And most importantly what does "nano" has to do with geology? Processes dealing with elemental distribution; heterogeneous catalysis; mineral growth, transformation, and weathering are all related to phenomena at the nanoscale (Hochella, 2008). One of the many examples is the natural formation of mineral nanoparticles by mechanical grinding in earthquake-generated faults. These mineral nanoparticles play an important role in fault mechanics because they can easily move past each other without mechanical shearing of individual grains and fill "anticracks" that do not need to dilate to create empty space (Dor et al., 2006). Realization of nanoscience's potential for studying natural systems has just begun. Previously unknown properties and mechanisms, not observable at larger scales, are being identified. So, when you see me next time, ask me more about "nano"!

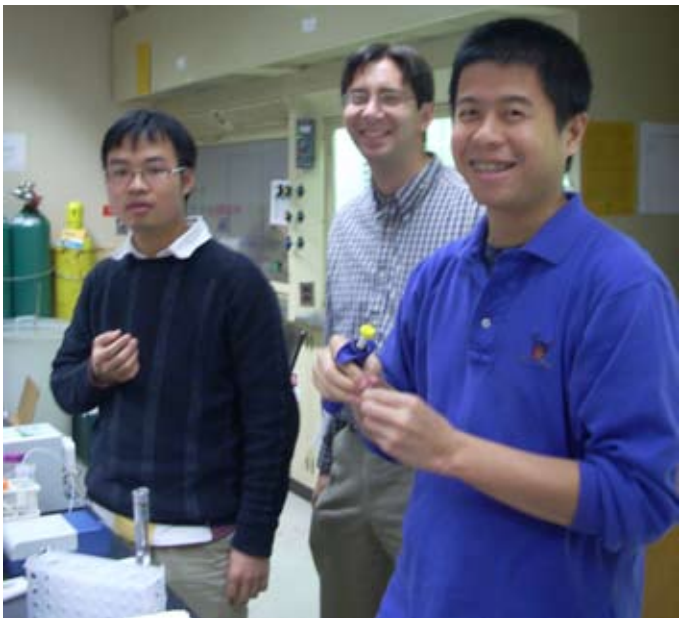
Dor O, Ben-Zion Y, Rockwell TK, Brune J (2006) Pulverized rocks in the Mojave section of the San Andreas Fault Zone. Earth and Planetary Science Letters 245:642-654

Hochella M.F. (2008) Nanogeoscience: From Origins to Cutting-Edge Applications. Elements 4:373-379a

Hematite on silica 5x5 um area 3 512 res Z(HGT) fwd



Let's do Science! Left to Right Alex Huang (BU PhD student), Andy Madden, and Boris Lau



FROM THE PROFESSORS
Dr. Lee Nordt

Steve Ahr continues his NSF funded doctoral research on an Alfisol climosequence in Texas. He finally has all of the necessary data in place to seriously begin writing his three manuscripts for the dissertation. Holly Meier is anxiously waiting for OSL ages for her dissertation work on alluvial deposits along Owl Creek at Fort Hood, Texas. She can then begin writing papers for her dissertation. I am assisting with Aislyn Trendell's research at Petrified National Forest (with Stacy Atchley) and Gary Stinchcomb's late Holocene fluvial work in Pennsylvania (with Steve Driese). Gary is already submitting manuscripts from his dissertation work as will Aislyn shortly.

Steve Driese as part of his presidential work with SEPM is leading an international paleosol conference at Petrified Forest National Park

Dr. Lee Nordt (cont.)

in Arizona in September. Stacy Atchley, Steve Dworkin, Aislyn Trendell and I will assist with the field trip, and along with other students give oral presentations and posters.

Stacy Atchley, Steve Dworkin and I continue work on our research project at Petrified Forest National Park working on the paleoenvironments along a continuous vertical section of over 1200 feet for the late Triassic. Steve and Stacy are successfully dating zircons from sandstones, which will result in a high resolution chronological framework. We have even discovered a silicified peat deposit.

I will be presenting a paper on stable carbon and oxygen isotopes across the Pleistocene/Holocene boundary in Laramie Wyoming in August. This is an invited presentation for the biannual American Quaternary Association.

Garrison has finished his last year of athletic eligibility playing on the Mary Hardin Baylor golf team. He finished his four-year career with a cumulative GPA in the Top X of all athletes. Garrison was also named to the Vice Presidents Athletic Honor Roll, recognized as an Academic All-Conference golfer for the American Southwest Conference, and will once again receive the All American Scholar by the Golf Coaches Association of America. Next year while finishing his degree, Garrison will be a student-coach for the golf team. This summer he will work at the Cottonwood golf course and continue to play in amateur tournaments.

Kaylee has completed her junior year at Midway High School. Kaylee played on the volleyball team this past fall. She also works with the Midway ISD after school program called PEP, where she oversees the care of 20-22 first and second graders. She has done hours of volunteer/ community service through several organizations such as Waco Orchestra Symphony Belles, Heart of Texas Fair and Rodeo Sweetheart, and Spirit of Midway. She also was a Link Crew leader for the incoming freshman at MHS, was named to the National Honor Society, and was a Diamond Darling for the baseball and softball teams. Kaylee is a busy young lady but enjoys it all.

Kathy enjoys working as outpatient surgery interview nurse at Providence Hospital. She works part-time, which allows her to accompany Garrison to golf tournaments and Kaylee to volleyball games. She continues to get our new home settled and keep the family intact.

We look forward to seeing you all during homecoming weekend!

Publications

Nordt, L. and Driese, S. (2010). New weathering index improves rainfall estimates for paleo-Vertisols. *Geology* 38:407-410.

Nordt, L. and Driese, S. (2010). A modern soil characterization approach to reconstructing physical and chemical properties of paleo-Vertisol. *American Journal of Science* 310:37-64.

Forman, S., **Nordt, L.**, Gomez, J., Pierson, J. (2009). Late Holocene dune migration on the south Texas sand sheet. *Geomorphology* 108:159-170.

Nordt, L. C. and Driese, S. G. (2009). Hydropedological model of Vertisol formation along the Gulf Coast Prairie Land Resource Area of Texas. *Hydrological Earth System Science* 13:2039-2053.

Nordt, L. and Wilding, L. (2009). Organic carbon stocks and sequestration potential of Vertisols in the Coast Prairie Major Land Resource Area of Texas. In *Soil Carbon Sequestration and the Greenhouse Effect, 2nd edition*, Lal, R. editor, pp. 159-168. Soil Science Society of America Special Publication 57. Madison, Wisconsin.

Nordt, L. (in press). Late Quaternary fluvial landscape evolution of the Rio Casas Grandes and San Pedro: Implications for the archaeological record. In *Late Archaic Cerros de Trincheras Sites of Chihuahua, Mexico*, R. Hard and R. Roney

Presentations, Lectures, and Other Scholarly and Creative Activities

Dworkin, S., **Nordt, L.**, and Atchley, S. (2009). A 7 Ma record of atmospheric $\delta^{13}C_{CO2}$ derived from organic matter in late Cretaceous and early Tertiary paleosols. Geological Society of America Annual Meeting, Portland, October.

Sankey, J.T., Atchley, S.C., **Nordt, L.C.**, Driese, S.G., Dworkin, S.I., Longrich, N., Fricke, H. (2009). A less diverse Late Cretaceous vertebrate fauna in Texas due to warmer and drier paleoclimates: evidence

Dr. Lee Nordt (cont.)

from vertebrates, paleosols, and isotopes. Advances in Western Interior Late Cretaceous Paleontology and Geology, Abstracts with Program, p. 43. May 22-23, 2009. St. George, Utah.

Stinchcomb, G., Messner, T, Driese, S., **Nordt, L.**, and Stewart, M. (2009). Floodplain response to late Holocene climate change and human land-use at the Manna Site (36PI04), Upper Deleware Valley, PA. Geological Society of America Annual Meeting, Portland, October.

Stinchcomb, G., Trendell, A., Driese, S, **Nordt, L.**, and Li, Zheng-Hua. (2009). Floodplain Soil Geomorphology at the Williams Creek Section, Axtell, TX: Implications for Late Holocene Fluvial Dynamics and Paleoclimate. Soil Survey and Landuse Workshop, College Station, Texas, February.

Grants, Contracts, Patents, and Software Copyrights

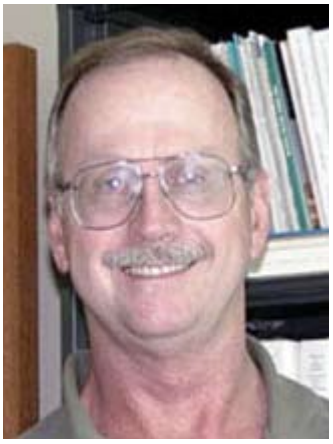
Breecker, D., Driese, S., and **Nordt, L.** (2009). Collaborative Research: Calibrating the paleosol carbonate CO2 barometer for vertic paleosols by monitoring soil CO2 in modern Vertisols. National Science Foundation, Geobiology and Low-Temperature Geochemistry program (FUNDED $292,550; Baylor $94,395)

Nordt, L. and Ahr, S. (2009). Determining the age and origin of the Texas sandy mantle: implications for archaeological integrity in upland settings, National Science Foundation, Doctoral dissertation improvement (FUNDED $15,000)

Atchley, S. and **Nordt, L.** (2006). The interrelationship of sequence stratigraphy, paleoclimatology, and terrestrial ichnology in Triassic paleosol-bearing alluvial successions, Moenkopi and Chinle Formations, southwestern United States. Petroleum Research Fund (FUNDED $80,000).

FROM THE PROFESSORS

Dr. Don Parker



There and Back Again, 26 Times

Becky and I were married on July1, 1978 in Hays, Kansas. During our escape from the reception, Becky's two brothers showered us with wheat seeds, an old German-Russian custom. After shaking these from our clothing, we made a brief official honeymoon to the Front Range in Colorado, then returned to Hays, where we left almost immediately for a field trip to the San Juan Mountains in our Datsun 280Z. As you might guess, a Z car is not a particularly good field vehicle under the best of circumstances, but it served us well as we drove along the unimproved Alamosa River road to Platoro and Summitville, Colorado, then up the Rio Grande to Creede. Becky navigated while I drove. After three days of looking at volcanic rocks with me, she asked, while looking somewhat bored up from her magazine,"That was Fish Canyon Tuff, wasn't it?."

In Creede, a jewelry store named "Rare Things" had just been opened by two SMU geology students; I bought Becky a pair of earrings. When we got back to Hays, the wheat seeds I had shaken off in a moist bathtub had sprouted and grown several inches upwards towards light streaming in from a window.

I owe Becky a lot – both of our children were born while I was in the field, Cimarron on the 1992 trip while the camp was in Durango.

In Hays, now mid-July 1978, I climbed into the Air Midwest twin engine puddle jumper for the flight to Denver Stapleton. Harold Beaver and a crew of Baylor students met me and I began teaching what was to be the first of some 26 field camps. I was

29 years old. The Department was short handed (Jerry Namy and Mrs. Spencer had left for other pastures and Jim Dixon had retired), so I was brought on a few months before I was supposed to start. Back then, the two principal Field Camp instructors were O.T. Hayward and Harold Beaver. O.T. taught a roving camp, traveling widely and making camp in a different place most every day; students would prepare presentations to be given in evenings; Harold ran more projects, based in central Colorado. Meals were prepared over wood fires; pretty soon everything was covered with soot and smelled of smoke (but the food was excellent). We had vans, sometimes outfitted with CB radios ("What the heck are those people talking about?"). Two of the vans were green and gold ("Greenie" and "Goldilocks"). They were un-airconditioned. When the temperature reached 115 degrees in St. George, Utah some of the students wouldn't climb out of the van to look at the Hurricane Fault despite my urgings.

In 1979, O.T. and I were supposed to teach the second session Field Camp. At the last moment, O.T. fell off his roof and broke his leg and I had to take the entire field camp. I extended the trip all the way to the Oregon Coast. It was a rough crew. There were eight guys and Martha Clark (Martha wrote in her field notebook: "Becky arrived today!" when Becky joined the group in Boise, Idaho). One student, who shall go nameless, did not wash his clothes for the entire trip.

Field camps normally had 8-10 students and two instructors, with one taking the group out and the other replacing the first half way through. Switch-off points were airports in Denver, Albuquerque, Salt Lake City, Durango, and Grand Junction. More often than not, the faculty exchange day occurred on the same day as the last day of the NBA finals, so we got to watch it on TV in the motel. The 1979 Field Camp occurred during the Iranian hostage episode, so we had "Day 23 of Students Held Hostage" and so on. This past summer camp occurred during the BP oil crisis; the exchange happened on "Day 60".

In 1978, 1979, 1982 and 1983, there were two field camps each summer. In 1980, there was only one camp with 19 students and three instructors (Peter Allen, Gus Morales and myself), two out at a time. The largest field camps were given in the early 80s when the Department had 200 majors. In 1982, 12

Al Jones on the Summit of Mt. Princeton (14,200 feet). FC 1978

Field Camp Students from 1978 at Dunn Bridge, NM. Seated from left: George Lambert, Lisa (Hayes) Meyerhoff, Ray Woodward, Susan Wood. Standing at right: Connie (Green) Smith

Jan Woodard and Desirie Pedrechi with "Goldilocks" van (FC 1980).

students took the first summer session camp and 19 the second. On these large camps, it was not uncommon for cameras or students to be left behind at stops ("Where is Sally?").

As some of the younger faculty began teaching more of the field camps, some changes occurred. We began basing some of the teaching at SMU's Fort Burgwin facility or the Sipapu Resort near Taos, New Mexico, and Fort Lewis College in Durango, Colorado. This allowed more mapping and stratigraphic exercises to be run while students got to stay in dormitory facilities. The Department installed AM/FM radios in vehicles over some of the older faculty's objections (mysteriously, the first radio installed in a truck was ripped out, leaving wires hanging out of the dashboard).

Robert Grayson and Cleavy McKnight replaced O.T. and Peter Allen by the early 90's and Steve Dworkin replaced Harold Beaver in 1995. Since 1998, Field Camp has been taught solely by Steve Dworkin and me. Steve was frequently accompanied by his lovely wife, Sandy. Many of his projects were based at Dinosaur National Monument in Utah and at Molas Pass in the San Juans. I'll let Steve tell his own stories, especially those about Las Vegas.

On my camps, many former students will remember the Ortega Quartzite and the Piedra Lumbre Formation in Rattlesnake Gulch of the Picuris Mountains; or maybe Horse Gulch, Coal Bank Pass and Lime Creek in the San Juans; or Calumet Mountain in the Arkansas Hills of central Colorado (a project introduced to us by Harold Beaver), and, in 2009, the flank of the Bear Tooth Mountains near Red Lodge, Montana. Some of the San Juan camps will remember the infamous "Bridge of Death" over Lime Creek – a log bridge over the roaring torrent that you had to cross to enter the map area. Other camps may remember bathing in the Rio Grande at the Dunn Bridge, sleeping in Split Rock cave in Canyonlands National Park (with Craig Hertel snoring loudly), or the student who stole clothing in town and sold it in camp (I still have the down vest for which I paid $8). Others may remember climbing Mount Princeton (eight started but only four made it to the top). Or they may remember the infamous 1995 basketball game where three out of ten were injured in a few minutes of play (sprained ankle, broken rib, broken nose – I broke a rib and my elbow broke George Allen's nose).

I am not sure what will happen to field camp in the future. Newer faculty have greater research demands – perhaps these can be wed to Field Camp projects. Whatever, if you search carefully, at several, special, secret places in the American West, you can find "Baylor Geology" carved, with appropriate years appended, in the soft white bark of Aspen trees. Thanks to all you former Field Camp students for your patience, good humor, and all that driving. It's been a great ride.

1982 Field Camp students crossing the "Bridge of Death"

Tara Rosie (center) and Roy Yates (left with ball cap) at Sandia Summit (FC 1987)

Rebecca Greier cooking marshmellows at camp (1991)

1991 Field Camp at Harding Pegmatite, New Mexico (left to right: Rebecca Greier, Jaime Flores, Alan Bartlett, Beth Rinard, Roman Maddox, Glen Bixler, David Feckley, Don Parker, and (in rear) Jimmy Sumrall. Ed Jakubowski must have taken the photo

Michelle Diehl and the powerful V10 "Green Machine" in Wyoming, 2090 Field Camp

Matt Bye (left) and John McFadden with La Plata Mountains in distance (2010 camp)

FROM THE PROFESSORS

Dr. Daniel Peppe

I am pleased to report that my first year at Baylor has been a productive and successful one on all fronts, and I've truly enjoyed becoming part of the Baylor community. Over the past year, I've taught two classes, coordinated the department's regular seminar series, worked with architects and contractors to design and begin building my lab, and traveled across the US and to Kenya to present and conduct my research.

I have found teaching to be both a rewarding and a challenging experience. In the fall semester I taught a graduate seminar called "Climate Change: Past, Present, and Future" where the students and I read and discussed research articles about several of the climate change events in the past and some of the models for future

climate change. I was impressed with the student's engagement and enthusiasm from the material, and their willingness to lead discussions and to engage in debate on the many articles we read throughout the semester. In the spring semester I taught "Dynamic Earth", our freshman-level introduction to physical geology. During the semester, I tried to teach the students about geology, its applications, and about the world around them. I received many positive comments from the students, and hopefully they found the course interesting and worthwhile. During the spring I also coordinated the Geology department's regular seminar series (GEO 5050), which was focused primarily on many different aspects of paleoclimate research.

In addition to teaching, I worked with architects and contractors to finish design and begin construction on the Thomas T. Goforth Paleomagnetism Laboratory. The shielded room construction, which will house the state-of-the-art magnetometer from 2G enterprises that was purchased thanks to the generous donation of Baylor Geology Department alumnus Dr. Ken Carlile, is nearly complete, except for some cabinets that will be installed this fall. The magnetometer and most of the other major equipment for the lab is also slated to arrive early this fall. As soon as it arrives, I will begin installing the magnetometer and the automated sample changer system. I look forward to getting the lab off to a productive start as soon as possible. Hopefully by the time I write the next newsletter the lab will be fully operational and I'll have some great new results to report!

My research program during the 2009-2010 academic year was successful. I have continued research, which I began during my post-doctoral appointment at Wesleyan University, focused on investigating the relationship between leaf characteristics and climate. I am currently just about to submit a manuscript that discusses the relationship between the size and shape of angiosperm leaves and changes in temperature and precipitation. In addition to this manuscript, this research resulted in two published papers in 2010 (Peppe et al., 2010 and Royer et al., 2010). We anticipate that a few more interesting publications will come from our analyses, and using our current dataset, we have identified several new research questions that we will begin developing over the next few years. In the past year, I presented this research at Southern Methodist University and two conferences. Our work has been well received, and I am excited about continuing this research in the future.

My ongoing research projects in Kenya are also going very well. Last summer we conducted a very productive field season focused on interpreting the paleoecology of Miocene fossil assemblages (~15-20 ma), the results of which we presented at several conferences. In addition the Miocene project, I have also begun to develop a project in collaboration with an archeologist from New York University and a geochemist from the University of Minnesota focused on reconstructing the paleoenvironment of the late Pleistocene in the Lake Victoria area of East Africa. We recently learned that this project will be funded by NSF for the next two years, and we are looking forward to intensifying our research program. We presented some preliminary results of this project at two conferences and recently published a paper in the Journal of Human Evolution describing the paleoecology of the deposits (Tryon et al. *in press*).

In addition to a expanding my research program, I'm happy to report that my lab group is also growing. In the past year, I recruited two master's students to Baylor, Alexander Van Plantinga and Cassee Lemons, began co-advising a PhD student, Lauren Michel, with Steve Driese, and have just started advising an undergraduate, Lyndsay DiPietro, on her senior thesis project. Alex, Lauren, and Lyndsay will be working with me on my projects in Kenya, and right now we are in the process of getting ready to head to the field this June. Lauren and Lyndsay's projects are focused on reconstructing Miocene paleoenvironments using paleosols, while Alex

is working on describing the stratigraphy and depositional features of the Pleistocene deposits. Casee will be joining us this fall and will be working on exploring the relationship between climate and leaf size and shape in ferns.

On the home front, Sholly and I moved into our house in Woodway last July and have been working on various projects inside and outside the house throughout the year. This fall we discovered our passion for gardening, and have really enjoyed our time planting and harvesting many different kinds of vegetables since then. Right now we're up to ears in lettuce, green beans, and zucchinis, and are anxiously awaiting our still-ripening tomatoes!

Overall, I've had a great first year at Baylor and in Waco, and I hope to meet more of you during our upcoming alumni events.

Publications

Peppe, D.J., *in press*, Megafloral change in the early and middle Paleocene in the Williston Basin, North Dakota, USA: *Palaeogeography, Palaeoclimatology, Palaeoecology.*

Tryon, C., Faith, T.J, **Peppe, D.J**., Fox, D.L., McNulty, K.P., Jenkins, K., Garrett, N., Dunsworth, H.M., Harcourt-Smith, *in press,* Paleoenvironmental context for Middle Stone Age hominins in Equatorial Africa: The Pleistocene Wasiriya Beds of Rusinga Island (Kenya): Journal of Human Evolution

Peppe, D.J., Royer, D.L., Wilf, P., Kowalski, E.A., 2010, Quantification of large uncertainties is fossil leaf paleoaltimetry: Tectonics.

Royer, D.L, Miller, I.M., **Peppe, D.J.**, Hickey, L.J., 2010, Leaf economic traits support a weedy habitat for early angiosperms: American Journal of Botany, 97(3): 1-8.

Presentations

Tryon, C., Faith, T., **Peppe, D.J.**, Fox, D.L., McNulty, K.P., Jenkins, K., Garrett, N., Dunsworth, H.M., Harcourt-Smith, W.E.H., 2010, Paleoenvironmental Context for Middle Stone Age Hominins in Equatorial Africa: The Pleistocene Wasiriya Beds of Rusinga Island (Kenya): PaleoAnthropology Supplement.

Dunsworth H.M., Harcourt-Smith W.E.H., McNulty K.P., and **Peppe, D.J.**, 2010. New catarrhine fossils from the early Miocene of Rusinga Island, Kenya: American Journal of Physical Anthropology Supplement 50: 98.

Peppe, D.J., Royer, D.L., Oliver, S., 2009, Digital Leaf Physiognomy: Using Leaf Size and Shape to Reconstruct Early and Middle Paleocene Climate Change in the Western Interior of North America: Eos Transactions AGU, PP11F-06.

Royer, D.L., **Peppe, D.J.**, Wilf, P., 2009, Paleoaltimetry from Fossil Leaves: Errors Bigger than Mountains: Eos Transactions AGU, T43D-2141.

Peppe, D.J., Royer, D.L., Oliver, S., 2009, Digital leaf physiognomy: using leaf size and shape to reconstruct ancient climates: Geological Society of America, Abstract with Programs, v. 41, no. 7, p. 568.

Fox, D.L., **Peppe, D.J.,** McNulty, K.P, Harcourt-Smith, W. Dunsworth, H.M., Lehman, T., Andrews, A.L., 2009, Geochronology, stratigraphy, and paleoenvironments of early Miocene vertebrate faunas from Mfangano and Rusinga Islands, eastern Lake Victoria, Kenya: Geological Society of America, Abstract with Programs, v. 41, no. 7, p. 362.

Tryon, C., Faith, T.J, **Peppe, D.J.**, Fox, D.L., McNulty, K.P., Dunsworth, H.M., Harcourt-Smith, W., Manthi, F.K., 2009, Paleoenvironmental context for modern human origins in equatorial Africa: introducting the Pleistocene Wasiriya Beds of Rusinga Island (Kenya): Geological Society of America, Abstract with Programs, v. 41, no. 7, p. 362.

Andrews, A.L., **Peppe, D.J.**, McNulty, K.P., Harcourt-Smith, W., Dunsworth, H.M., Deino, A.L., Fox, D.L., 2009, Magnetostratigraphy of the early Miocene Kulu and Hiwegi Formations on Rusinga Island (Lake Victoria, Kenya): Geological Society of America, Abstract with Programs, v. 41, no. 7, p. 672.

Royer, D.L., **Peppe, D.J.**, Miller, I.M, Hickey, L.J., 2009, Leaf economic traits from fossils support a weedy origin for angiosperms: Geological Society of America, Abstract with Programs, v. 41, no. 7, p. 564.

FROM THE PROFESSORS

Dr. Jay Pulliam

The year 2010 has already been a big year for earthquakes, including the hugely destructive Haiti earthquake in January, followed by significant earthquakes in Chile and China, among others. As a result of my previous work in the Caribbean I was invited to attend workshops entitled "Rebuilding for Resilience: How Science and Engineering Can Inform Haiti's Reconstruction", sponsored by the National Science and Technology Council, Department of State, and Agency for International Development and "The 2010 Haiti earthquake: Lessons learned to help in planning for future earthquakes in Hispaniola and the Northeast Caribbean". These will be followed by a workshop I am helping to organize in Costa Rica, entitled "Geophysical Hazards and Plate Boundary Processes in Central America, Mexico and the Caribbean: Efforts to Build Seismological Collaboration and Capacity." This workshop will be funded by NSF's Office of International Science and Education, the U.S. Agency for International Development's Office of Foreign Disaster Assistance, and the American Geophysical Union.

In the Haiti workshop we seismologists laid the groundwork for improved monitoring and hazard studies in Haiti, as well as the creation of a regional earthquake and tsunami center. In the Dominican Republic workshop we will produce a workable strategy for improving monitoring and basic research in the DR, as well as advance specific plans for intensive studies of seismogenic faults on the island of Hispaniola. In the Costa Rica workshop we will focus on improving cooperation between institutions that conduct seismology research in the region and institutions that conduct seismic monitoring, and try to design a strategy for improving both the intellectual capital of the region that is focused on geophysical hazards and research and infrastructure for carrying out geophysical studies. Hopefully one result of these efforts will be better assessments of geophysical hazards and, ultimately, mitigation strategies.

Research by my students also advanced significantly. PhD student Hallie Mintz passed her proposal defense and presented results on seismicity and tectonics of the Northeast Caribbean at the annual meeting of the Seismological Society of America (SSA) in Portland, OR in April 2010. M.S. student Carrie Rockett also presented results at the SSA meeting, her presentation was called "A seismic investigation of the Rio Grande Rift: The role of edge-driven convection in continental rifting". Undergraduate geophysics major Tia Barrington presented her results at the Baylor Geological Society Alumni Symposium and URSA Scholar's Week: "Seismic anisotropy of the Rio Grande Rift and surrounding regions". Undergraduate geophysics majors Tia Barrington, Ben Phrampus, Jon Brown, and Mark McCollum all participated in fieldwork on the Texas Gulf Coast with me and Professor John Dunbar during the summer of 2010, along with incoming graduate student Mark Speckien.

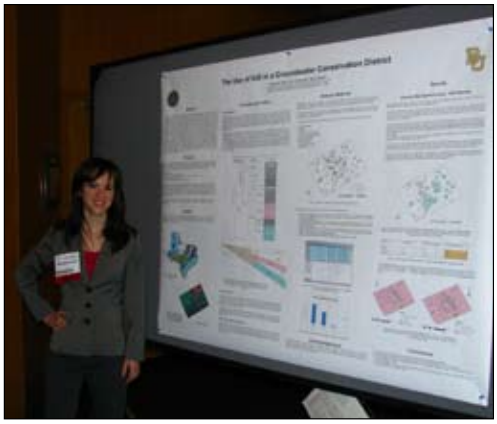
I am engaged in several active research projects that involve a lot of fieldwork, including (1) SIEDCAR: Seismic Investigation of Edge Driven Convection Associated with the Rio Grande Rift , (2) Studies of the Seismicity and Tectonics of the Northeast Caribbean, (3) Seismic Velocity Estimation from Multiple Waveform Functionals in the Middle East, and (4) Studies of the geophysical structure of the Texas margin. These are funded by grants from the National Science Foundation, the Department of Energy, the U.S. Geological Survey, ExxonMobil, and the Norman Hackerman Advanced Research Program.

With regard to the deployments on the Texas Gulf Coastal Plain, we are off to a roaring start with broadband stations in May and June. We will return to the region in July to collect onshore/offshore seismic refraction data with the ExxonMobil-sponsored project and will demobilize the 71 seismographs in southeastern New Mexico and west Texas that we deployed in 2008 for the SIEDCAR study. Our program generated a great deal of news in the popular press in 2010, partly as a result of the EarthScope's USArray entering our region and partly because of the large earthquakes that frequently grabbed the world's attention. I again invite all of you to stop by if you visit Baylor to see what we're doing here and give me a chance to meet you.

FROM THE PROFESSORS
Dr. Joe Yelderman

Hydro-stars abound! Dr. Yelderman welcomed three new MS students in hydrogeology, saw two of his wastewater students graduate with their MS degrees and two students finish their undergraduate degrees. New hydro-stars include Michelle Diehl and Stephanie Wong who came in Fall 2009 and Laura Foss who started in Fall 2010. Michelle is a BU geology alum and has decided to stay at Baylor to help the recently formed Southern Trinity Groundwater Conservation District. Stephanie received her BS from Carleton University in Ottawa, Canada and will be working on the Brazos River alluvial aquifer. Laura comes from The University of Texas at Dallas and has not chosen her specific thesis topic at this time. In addition to these graduate students, Dr. Yelderman is advising undergraduate Ryan Danielson who is studying temperature variations in groundwater/surface-water interactions for his BS thesis. Ryan is focussing on the Brazos River and its alluvial aquifer so he is working with Stephanie who received a Dixon field mentorship for Ryan. Stephanie and Ryan were also awarded the Elan Alan field safety scholarships for the safety plans they employed with their field work. Dr. Joe advised incoming freshmen again this past summer but for the first time he is now helping Dr. Bonem advise undergraduate geology majors in the department due to the recent increase in the number of majors. Dr. Joe is advising 17 geology undergraduate students for the department and is also mentoring new professor Dr. Boris Lau.

Ryan Danielson installing a minipiezometer



Michelle Diehl presenting poster at the Groundwater Summit

Dr. Joe attended the NGWA Groundwater Summit in Denver where he presented a paper with co-author Adam Clapp on their water management plan for Hacienda Baru, Costa Rica. Michelle Diehl and Stephanie Wong presented posters at the Summit and they were both well received. Stephanie was awarded the Robert Farvolden Scholarship from the National Groundwater Research and Educational Foundation for her poster presentation. The $500 award was based on the quality of the presentation, content (including contribution to groundwater science) and demonstrated insight on the chosen topic. Michelle has received the first internship for the Southern Trinity Groundwater Conservation district and will be completing her MS thesis in conjunction with the District.

The Baylor Wastewater Research Program (BWRP) continues to flourish. Adam Clapp completed his MS degree and has accepted a position with the Waco Metropolitan Area Regional Sewerage System in the industrial pre-treatment section. Because of his new position

Stephanie Wong teaching Whitney ISD 8th graders .

Hydrogeology class measuring stream flow near Del Rio, TX.

Adam was unable to attend the annual meeting of the Society of Wetland Scientists in Salt Lake City this summer where co-author Dr Joe presented the results of Adam's thesis; *Storage and Nexus for Coastal Prairie, freshwater wetlands.*

Dr. Yelderman received three grants this past year; continuation of the Murphy-Cormier wastewater grant, a grant from Southern Trinity Groundwater Conservation District and a grant from the City of Woodway to develop an interactive map for their escarpment ordinance. The highlight from these experiences was Dr. Joe's first appearance on the National Public Radio program "*All Things Considered*" for the escarpment ordinance work. Integral to the success of much of the research this past year has been the result of skills possessed and shared by Bruce Byars in the Center for Spatial Research. Bruce and Dr. Joe mentored a study by Amy Price on spring ecosystem management following the general methods from a short course Dr. Joe attended at the Groundwater Summit held in 2008. Amy is interning this summer with the US Army Corps of Engineers at Lake Whitney. In spite of all these great activities, the highlights of the year for Dr. Yelderman were the exemplified in the success of former students. This past year Brian Scheffe (MS-04) served as president of the Colorado Professionals in On-site Wastewater and was instrumental in legislative changes in on-site wastewater treatment regulations in Colorado. He has recently "jumped the pond" and taken a new position with a firm in England. Charles Thomas (MS-97) is now Manager - Environmental Remediation with BNSF Railway in Fort Worth. Last but certainly not least is the selection of Brian Clark (MS-00) as Outstanding Young Alumni by the Baylor Alumni Association (see article this issue).

The Yeldermans still live at 706 Woodland West, Woodway, Texas and visitors are always welcome. Dr. Yelderman continues to teach Sunday School at Columbus Avenue Baptist Church. Diane (wife of 35 years) continues to teach Kindergarten at North Waco Elementary. Logan (son #2) is finishing his BA degree with a double major in Speech Communication Specialist and Psychology. Cal (son #1) received his MA in English - Creative Writing from New Mexico Highlands University in May and will be teaching both writing and literature at NMHU this year. Married daughter, Abigail White, lives in Houston with her husband, Jared, where she works as an assistant to the Young Marrieds Pastor at Second Baptist Church and Jared works as an auditor for Price-Waterhouse-Coopers. Abbi and Jared have a beautiful daughter, Madison, who is the first grandchild for Dr. Joe and Diane (see photo below). Diane and Dr. Joe adore Madison and all family members agree that Madison should have limited exposure to Grampa Joe until she is a little older.

"My Grampa studies this stuff." says little Madison.

Joe Yelderman: Recent Publications,* Presentations and Radio Interviews

*Carr, M.E., Jumper, D.L., and **Yelderman, J.C., Jr.**, 2009, A comparison of disposal methods for on-site sewage facilities within the state of Texas, USA: *The Environmentalist*, v. 29, no. 4, p. 381-387.

Clapp A., and **Yelderman, J.**, 2010, Developing Sustainable Water Resources Starts at the End, *NGWA Groundwater Summit*, 2010 Denver, Colorado, April 11-15.

Clapp A., Forbes M. and **Yelderman, J.**, 2010, Storage and Nexus for Coastal Prairie, freshwater wetlands, *International Society of Wetland Scientists*, annual Meeting Salt Lake City Utah, May 27-June2.

*Forbes, M.G., **Yelderman, J.**, Doyle, R., Clapp, A., Hunter, B., Enright, N., and Forbes, W., 2009, Hydrology of Coastal Prairie freshwater wetlands: *Wetland Science and Practice*, v. 26, no. 3, p. 12-17.

Forbes, M., Doyle, R., and **Yelderman, J.**, 2010, Can small freshwater wetlands play a role in regional water quality? *International Society of Wetland Scientists*, annual Meeting Salt Lake City Utah, May 27-June2.

*Forbes, M. G., **Yelderman, J. C.**, Potterton, T., and Doyle, R., (in press), Effects of intermittent loading on nitrogen removal in horizontal subsurface flow wetlands: *Water Science and Technology* (accepted for publication, reference number: WST-WSTWS-EM10353R1).

Pfluger, S., Massengale, R and **Yelderman J.**, 2010, Study to Compare Reduction of Bacterial Numbers & Virulence by Multiple Onsite Wastewater Treatment Methods, Presentation, *18th Annual Meeting of the TOWTRC*, Mesquite, Texas

Yelderman, J. C., Jr., 2009, Interactive on-line geology map for Woodway, Texas, *All Things Considered*, KWBU/PBS radio broadcast with interview, 10-28-09.

FROM THE PROFESSORS

Dr. Ren Zhang

I am the new Instrumentation Specialist at the Stable Isotope Geochemistry Laboratory located in BSB B408, and my primary responsibility is the daily operation and maintenance of the Thermo Delta V Advantage IRMS with following three peripherals: Gas Bench II, combustion EA, and TCEA. The IRMS can carry out both on-line continuous flow analysis and off-line measurements on a dual inlet setup. The primary analytical service we can provide include carbon, oxygen, nitrogen, hydrogen isotope ratio analysis of geological and biological samples, such as paleosols, cave deposits, lake deposits, water, plants, animal teeth, fish bones, etc. We can also provide a short training course for both undergraduate and graduate students on how to use IRMS to analyze isotopic compositions of geological materials.

I graduated from McMaster University in 2008 with a PhD in Geology, and my major research project was to extract paleoclimate information from stable isotope analyses of carbonate speleothems and their fluid inclusions. If speleothems were formed under isotopic equilibrium, we could use isotopic fractionation factor between calcite and the trapped paleowaters to calculate absolute depositional paleotemperatures, which are approximately equal to local annual mean temperatures above the cave. In comparison with other paleoclimate proxies, speleothems are well preserved, broadly distributed, easy to access and handle for both sampling and lab work, and can be dated with great precision. Therefore, we are able to extract high temporal resolution paleoclimate records from speleothems for regional and global paleoclimate correlation.

In 2007, Baylor University approved funding for the Research Initiative in Terrestrial Paleoclimatology Major Strategic Proposal (MSP) in the Department. I look forward to working closely with both faculty members and students currently engaged in this research project to make my own contributions.

New Lab Construction

During the 2009-2010 academic year the design and major construction phases of the Thomas T. Goforth paleomagnetism laboratory and the paleobotany laboratory for Dr. Dan Peppe were completed. The laboratory is located in the 4th floor of the E-wing in the Baylor Science Building. Dr. Peppe will conduct both paleobotany and paleomagnetism research within the laboratory.

Peppe's paleobotany research uses paleobotanical techniques to reconstruct paleoenvironments, estimate paleoclimate, and to examine the evolutionary history of plant communities. In particular his research focuses on fossil leaves (Figure 1). Part of the lab will be used to conduct this research (Figure 2). This area will contain instruments for preparing fossil leaf samples, a stereomicroscope for examining fine-scale details of fossil leaves, a camera stand and photography area for photographing specimens, and large cabinets for storing fossil samples. There will also be student workspace available.

Figure 1. An fossil leaf from the Paleocene Fort Union Formation in the Williston Basin, ND. This species is related to modern sycamores.

The other area of the lab, the Thomas T. Goforth Paleomagnetism Laboratory, will be used to conduct paleomagnetism research in age dating and correlation. Peppe integrates his paleomagnetism and paleobotany research to study plant communities and then make regional and global correlations to synchronous ecosystems. Additionally, Peppe is using paleomagnetism in collaborative projects with paleoanthropologists and archeologists in Kenya as a tool to date and correlate important fossil localities.

In the simplest terms, the Thomas T. Goforth Paleomagnetism Laboratory is a very large magnetized steel box inside an even larger magnetized steel box, which we refer to as a magnetostatic shield, inside of the main laboratory space. More specifically, the shield is a room made of two layers of high-permeability steel (Figure 3) separated by a 15 inch air gap that have been magnetized to attenuate the earth's magnetic field. The magnetized outer steel wall blocks 95% of the earth's magnetic field. The magnetized inner steel wall blocks approximately 90% of the remaining 5% of the earth's magnetic field meaning that the shielded room blocks out about 99.6% of the earth's magnetic field. The very low magnetic field inside the magnetostatic shield

Figure 2. Paleobotany work space inside of Dr. Peppe's lab.

makes is possible to measure the magnetic signatures of rocks and sediments very precisely and accurately. The shielded room was built at Baylor by Gary Scott and his crew from Lodestar Magnetics, Inc.

The shield was constructed in six stages.
Stage 1: Before the shield was assembled, the laboratory space surrounding the location of the shield was demagnetized and the magnetic field was measured to determine the precise direction of the earth's magnetic field (Figure 4). Based on those measurements, Lodestar Magnetics was able to determine the locations for openings in the shield.
Stage 2: After demagnetization and the measurements were completed, Lodestar first built the outer shield (Figures 5-9). The outer shield was made from fire-resistant plywood and lumber covered with thin sheets of high-permeability steel.
Stage 3: After the outer wall construction was completed, the outer wall was magnetized. During this step, 95% of the earth's magnetic field was blocked.
Stage 4: The inner walls were constructed using plywood and thin sheets of steel (Figures 10-12). Before the inner wall was finished Peppe, several of the Geology Department graduate students, and the crew from Lodestar Magnetics signed a piece of the inner steel wall and put a time capsule with several items inside the shield (see the list of items included in time capsule and Figure 13).
Stage 5: The inner walls were magnetized, blocking out 90% of the remaining 5% of the earth's magnetic field.
Stage 6: The inner and outer walls were skim-coated with drywall compound and painted (Figure 14-15).

The interior of the completed shield is 14' X 10' and is spacious enough so that Peppe and his students can work inside the room (Figure 16). There is space for two work stations, cabinets for sample storages, and space for the magnetomer and demagnetization equipment designed to measure the magnetic signature of rocks and sediments (Figure 16). The major piece of equipment in the shield will be the superconducting rock magnetometer built by 2G Enterprises (see http://www.2genterprises.com/ for information about 2G enterprises and the magnetometer). The magnetometer was purchased thanks to the generous donation of Geology Department alumnus Dr. Ken Carlile. The cabinets, work stations and magnetometer will be installed in Fall 2010.

One of the major features of Baylor's Thomas T. Goforth Paleomagnetism Laboratory will be the automated sample changer system (Figure 17). Because the reliability of earth's magnetic field that is recorded by rocks and sediments is dependent on the properties of the rocks themselves and their histories, hundreds of samples need to be measured at several progressive demagnetization levels. If done manually, this is an incredibly time-consuming process making

Figure 3. Sheets of high-permeability steel used in construction of the magnetostatic shield.

Figure 4. Gary Scott and team from Lodestar beginning measurements of the ambient field within the laboratory.

it difficult to quickly produce reliable, reproducible results. With the automated sample changer system, we can measure up to 180 samples successively between user computer inputs reducing the number of manual steps required per specimen by almost 8 fold. Additionally, it makes it possible to rapidly analyze large numbers of samples which drastically increases lab productivity. With the installation of this automated sample changer system, Baylor will become one of only nine other institutions in the RAPID (Rock And Paleomagnetism Instrument Development) consortium with this system (see details of the group at the website: http://rapid.gps.caltech.edu/). As soon as the 2G magnetometer arrives this fall Peppe's Lab group and members of the RAPID consortium will begin installation of the sample changer system. We anticipate that the lab will be fully operational late in the Fall 2010 semester.

Peppe and the Geology Department invite you to come visit the lab to see the facilities in person and learn more about the type of research that is taking place in the Geology Department and in Peppe's lab.

Figure 5. Construction of the bottom of the outer shield floor.

Figure 6. Just before lifting of the first outer shield wall.

Figure 7. The first outer shield wall and floor in place.

Figure 8. Lifting the third outer shield wall into place.

Figure 9. Completion of the outer shield and just prior to demagnetization of outer shield wall.

Figure 10. Construction of inner shield walls.

Figure 11. The floor of the inner shield is finished and construction of inner shield walls and ceilings is ongoing.

Figure 12. Construction of the inner shield ceiling.

Figure 13. Baylor graduate students, Dr. Peppe, Gary Scott from Lodestar magnetic, and lab visitors during the emplacement of the time capsule inside the shield.

Figure 14. Skim-coating the outer shield walls.

Figure 15. The Thomas T. Goforth Paleomagnetism Laboratory as of 6/1/2010.

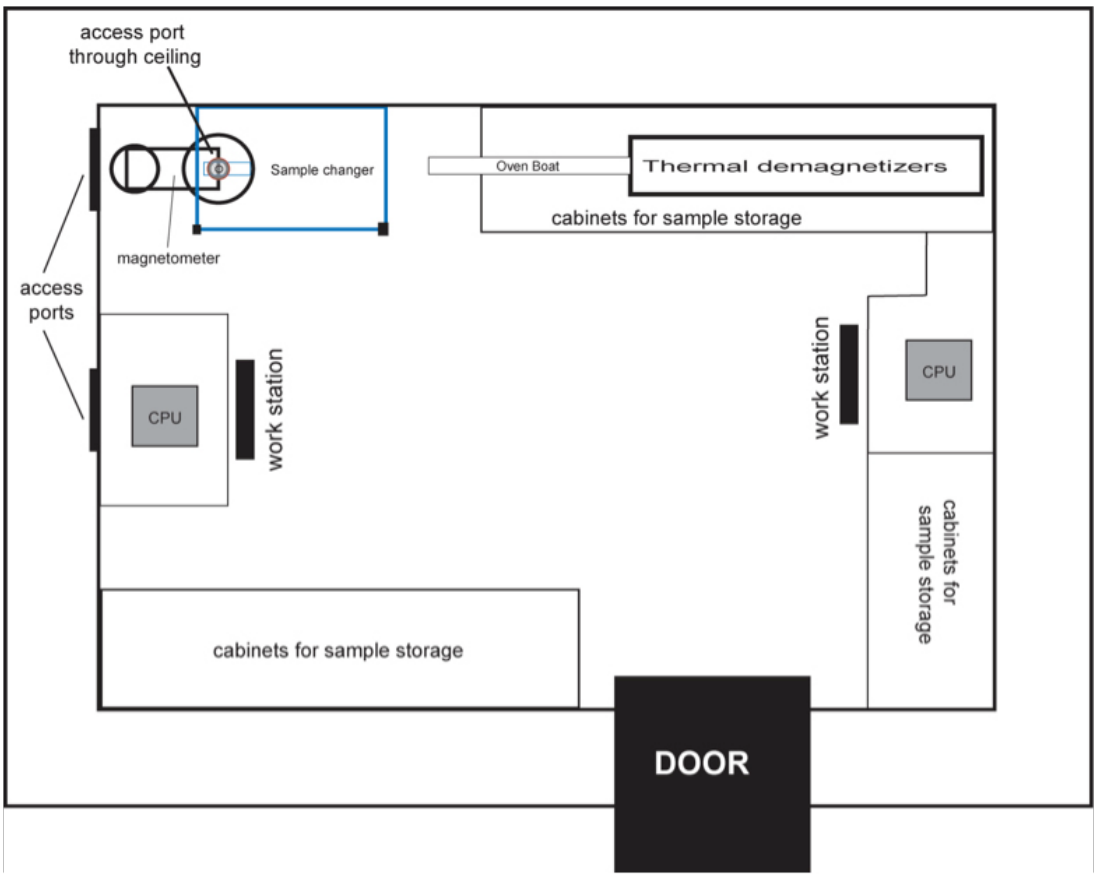


Figure 16. Design plans for interior of Thomas T. Goforth Paleomagnetism Laboratory. The cabinets, work stations, automated sample changer system, and the magnetometer will be installed in Fall 2010.

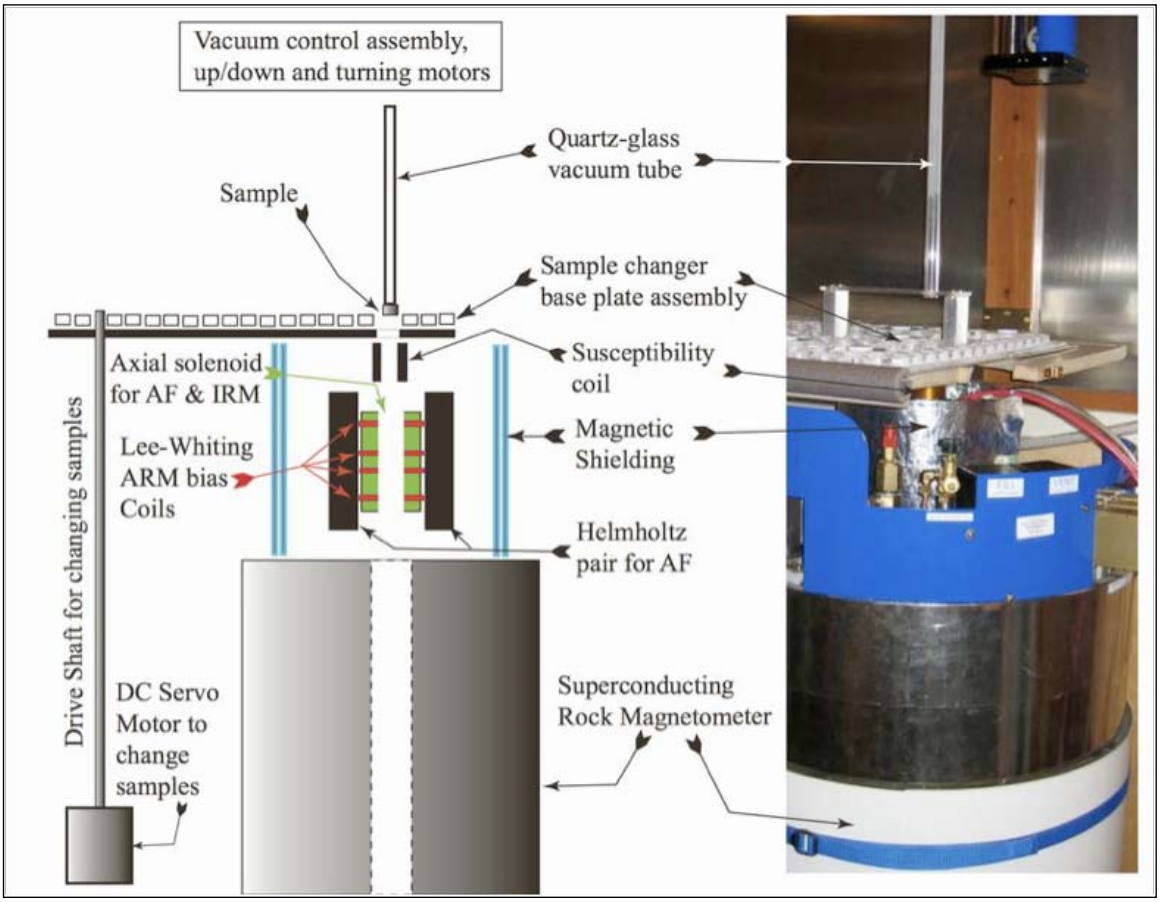


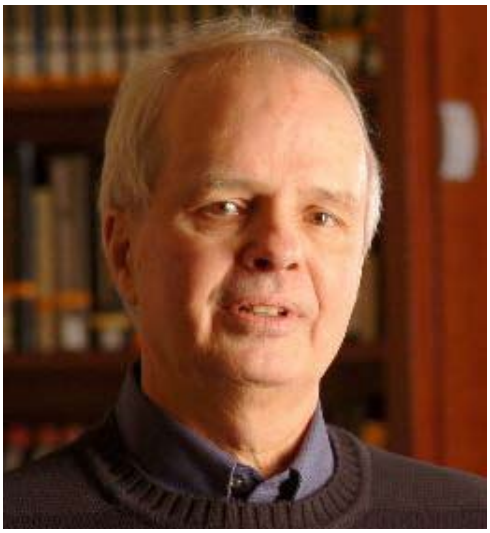
Figure 17. Schematic of automated sample changer from RAPID consortium website: (http://rapid.gps.caltech.edu/Hardware/SampleChanger).

New Lab Construction, cont.

Items in the time capsule:

Avatar 3D glasses
Baseball and softball posters
Geologic Time Scale
Quartz sand in film canister for OSL dating
Newspapers from recent events
Geology newsletter (2009)
Money from US and other countries
Pictures of time capsule events and people in attendance
Pictures of shield construction
Team Stars rally towel
Eclogite baseball card
Tibetan prayer flags
Dharma Initiative patch
Peppe hire press announcement
2010 Olympic mascot
Signed piece of steel
Waco Meats hat

Be sure to check the Geology website for information about the upcoming Spring 2011 lecture. Details are TBA.



O.T. Hayward Distinguished Lecture

Early Agriculture Started the Anthropogenic Era Thousands of Years Ago

Presented by:
Dr. William F. Ruddiman
Emeritus Professor, University of Virginia

February 25-26, 2010
Baylor Sciences Building

Baylor University's Department of Geology in the College of Arts and Sciences hosted a lecture by Dr. William F. Ruddiman, professor emeritus of environmental sciences at the University of Virginia, Charlottesville, VA.

As part of the Geology Department's O.T. Hayward Lecture Series, Ruddiman presented his lecture "Early Agriculture Started the Anthropogenic Era Thousands of Years Ago" on Thursday, February 25, in Baylor Sciences Building. On Friday, February 26, Ruddiman also led a more specialized lecture on the same subject for the Geology Department.

Ruddiman's lecture discussed his 2003 hypothesis that early farming caused small releases of carbon dioxide and methane before the Industrial Revolution that may have offset natural cooling driven by Earth's orbital variation. The offset of natural cooling would have caused the start of the next glaciations by now, he said.

"If my hypothesis is correct, it doesn't really change anything about our climatic future, but it puts our past effects on climate in a different light," Ruddiman said.

"Impact on climate from 200 years of industrial development is an everyday fact of life," Ruddiman said.

In addition to presenting evidence to support his hypothesis, Ruddiman brought in arguments against his hypothesis. "Most of the criticisms have been part of the normal process of science and a positive thing. I have used the criticisms to look more closely into the observations and assumptions on which my hypothesis is based," Ruddiman said.

Ruddiman earned his doctorate from the Columbia University in New York in 1969. His most recent publication is *Plows, Plagues and Petroleum: How Humans Took Control of Climate.*

"Dr. Ruddiman is a world-renowned paleoclimatologist," said Dr. Steven Driese, Professor and Chair of Geology. "The series and our Department are very lucky to have him."

The O.T. Hayward Lecture Series is part of an endowment provided by Connie Hudson and his wife Virginia. The Baylor alumni named the series after Dr. O.T. Hayward, Professor Emeritus of Geology at Baylor.

Hayward spent more than 4,000 hours in the field with students. He became a professor at Baylor University in 1955, retiring in 1992, and directed more student research than any other Geology faculty member.

-by Colton Wright, student news writer

GEOLOGY EVENTS
Summer Field Camp 2010

Camping in Idaho

Camping in Yellowstone

Dr. Dworkin helping students with a project

Field Camp group in Yellowstone

Field camp student working on a project

Student working on a project in Yellowstone

GEOLOGY EVENTS
Field Camp 2010, cont.

Students setting up camp in Idaho

Students settling into camp

Students working on a project in Yellowstone

Students working on a project in Yellowstone

The group at the Saw Tooth Mountains

Hope Sepala visiting with a passerby

GRADUATES AND AWARDS

Bachelor of Science Thesis

Russell Hunter Harlow (May, 2010) – Paleosol geochemistry and terrestrial sequence stratigraphy: Using molecular weathering ratios in the sequence stratigraphic interpretation of the Middle Devonian (Givetian) Upper Plattekill, Manorkill, and Oneonta Formations, Catskill State Park, New York, USA

William Cross Torsch (May 2010) – Abundance and Character of Late Quaternary Paleosols Preserved at Red Bluff, along Owl Creek, Fort Hood, Texas.

Thomas Colby Wright (December 2009) – Estimating Middle Devonian Soil Ages Using Point-Counting of Pedogenic Clays in Paleosols.

David Edlin (August 2009) – Reconnaissance Geochemistry of Sierra Grande Volcano, Raton-Clayton Volcanic Field, Northeastern New Mexico.

Graduate Thesis

Matthew R. Schreiner, MA (December 2009) – Methods of Determining Stream Setback Corridors in Urban Watersheds from Remotely Sensed Data in the Dallas Metropolitan Area, Texas

Awards

William Torsch – 2010 recipient of the Robert T. Hill Award for Academic Excellence in Geology

Hunter Harlow & William Torsch – Chosen to represent the Geology Department at the 2010 College of Arts & Sciences Honors Convocation

Lindsay DiPietro, Ryan Danielson, Chase Gerken – 2010 recipients of the Dixon Undergraduate Field Assistant Award

Will Torsch, Dr. Stacy Atchley, and Hunter Harlow at the 2010 College of Arts & Science Honors Convocation

Stephanie Wong & Ryan Danielson – 2010 Elan Allen Field Safety Award (pictured above)

The Elan Allen Safety Scholarship is named in honor of alumnus, Elan Allen, who died tragically in a field accident while working as a consulting geologist. The purpose of the scholarship is not only to honor Elan, but also to promote safety in field work and to hopefully prevent future accidents through planning and awareness. The scholarship is awarded each year to the student (or students) that demonstrate the best safety plans for their field work. The successful applicant must be recommended by at least one faculty member and then provide the scholarship committee with an example of the way they plan to incorporate safety into their field activities. A committee of three current Baylor faculty members who maintain active field programs select the winner(s) after reviewing all applications. The Elan Allen Safety scholarship was awarded this year to two students. First place was awarded to Stephanie Wong. Second place was awarded to Ryan Danielson. Both students are working in the Brazos River alluvial aquifer and will act as field partners for most of their work. Stephanie is a Master's student from Canada and Ryan is an undergraduate from California. Both students are studying hydrogeology and working with Dr. Yelderman.

Stephanie said "the exercise made me think more about safety in general and made me more aware of safety issues specific to this area." Ryan responded that he "became aware of how important it is to be organized and to plan ahead to know where local hospitals are located." In addition, both students were trained by Bruce Byars in rapelling to help them work on the steep slopes associated with sand and gravel pit walls.

BAYLOR UNIVERSITY
DEPARTMENT OF GEOLOGY

June 28, 2010

Dear Baylor Geology Colleagues:

In business, who you know counts for a lot. What stronger connection is there than that developed from field trips to the Lampasas Cut Plain, whether yesterday or 25 years ago? Working out in the field under the Texas heat has a way of strengthening bonds! To help renew old contacts and forge new ones, the Baylor Geology Advisory Board sponsored an alumni reception at the Annual AAPG Convention last April in New Orleans to reach out and recognize colleagues in that part of the world. Thanks to Chris Goss and Art and Sue Bishop for their contributions!

In the future the Board plans to host more local receptions, perhaps at Southwest Section and Gulf Coast Section AAPG Conventions, but also to expand to other fields such as hydrology and environmental. This fall, we will host a tailgate party at one of the home football games, and oh, remember those pictures of you taken on summer field course…

One of the most rewarding activities this past year was alumni coming to campus for BGS "Brownbag" Luncheons to make presentations on their respective endeavors to the students and take a few out for lunch. Big thanks to Chris Goss, Frank Hernandez and Hank Jamison. They will tell you it was as rewarding for them as well as the students. This experience gave students many opportunities to discuss real world issues of their academic pursuit and be mentored. This is a great opportunity to help encourage and share some of your experience and "workplace wisdom." Slots are available for next fall and spring semesters, so we can fit you in!

One area we need to work on in the future is reaching the Geology Resource Fund Endowment goal of $150,000. The Endowment helps keep the professors and students at the forefront of research by providing funds for journal subscriptions and library books. So far, $30,000 has been raised. Some ideas have been floated such as golf scramble, but we need more help to pull this off. So, if you have any suggestions, want to help, or just want to write a check, the Endowment will gladly accept.

Organization of the Board has also been simplified to allow for continuity of leadership. Officers now serve 3-year terms beginning with Secretary the first year, Vice-Chair the second year, and Chair the third year, and then rotate off. This provides time to develop familiarity with members, needs and plans of the Board. Jim Bain volunteered to serve as Vice-Chair and Josh Talbert served as Secretary. Thank you Jim and Josh!

These are some of the activities the Board accomplished this past year, but it is just a start. To join, all you have to do is show up. We look forward to seeing you!

Keep 'em Turning to the Right!

Robert H. Springer
Past-Chair, Baylor Geology Advisory Board

GIFTS AND DONORS

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Thanks to our donors (listed right) for their generous gifts to the Geology Department (June 1, 2009 – May 31, 2010). Here are some of our current students who were helped through the contributions of donors and alumni this past year:

O.T. Hayward Field Research Account: Adam Damman (funded specifically by a donation from Ruth King in memory of her husband, George King, who was a member of the first Baylor Geology class), Dan Lancaster (Summer 2010), Stephanie Wong (Summer 2010), Joseph Sang (Summer 2009), Sara Sipahioglu (Summer 2009)

Leo Parchman Scholarship: Rixiang Huang

L.W. Littlejohn Scholarship: Michelle Diehl

Geology Special (used for off-campus field course expenses and thesis field expenses): Alex Van Plantinga for research in Kenya this summer and Hope Sepala, specifically assisted by Anne Grau and Cindy Smith while on a summer field course. (Their donations are intended for women geologists.)

Gifts from recent donors for thesis funding, travel to meetings, cost of off-campus field courses and other needs include: Henry (Hank) Jamieson, Thomas Moore, Kenneth Dunlap, Daniel Jaffe, Amy Fitzpatrick, Archie Mosteller, Chad Harris, Marlow Anderson-Newton, James Smith, John Shelton, Phil J. Jones, Rena Bonem, Steven and Marylaine Driese, Nancy Laing, Martin Shields, John Van Camp, Dwayne and Suzie (Dahl) Crumpler, American Association of Petroleum Geologists, Abilene Geological Society, Willliam Atlee, Art and Sue Lynn Bishop, Bill Godsey, Jim and Lisa Meyerhoff, Mark Myrick, Lauren Seidman, Robert Springer, Robert Rodgers, Bobbye Sue Parsons, Robert Hobbs, Ronald Ayars, John Barnhart, and Leonard Ellis.

Anadarko Petroleum Corporation generously helped with a vehicle purchase which provides transportation for students and faculty.

Dixon Field Assistants: Lindsay DiPietro – assisting Lauren Michel in the field work in Kenya, Ryan Danielson – assisting Stephanie Wong in local Hydrogeology Field Work, Chase Gerken – assisting Gary Stinchcomb in New Jersey and Pennsylvania, Joseph Sang – assistant not yet named

Elan Allen Field Safety Award: Stephanie Wong, Ryan Danielson

Tom Moore Scholarship Account: Hunter Harlow

GIFTS AND DONORS, CONT.
Students' Stories (by Davin Allen)

Geophysics, Baylor, and a Dream

Ben Phrampus came to Baylor with full intentions of transferring after his first year. With two younger brothers nearing college-age, he knew he couldn't afford to stay the full term. But after a semester at Baylor, Ben loved everything about it. His Welcome Week group developed into amazing friendships and the Geology Department brought the study of the Earth to life. Seeing math, physics and geology come together riveted Ben, and he knew geophysics would be his future. However, he still could not afford to stay. A Baylor education was impossible.

"There is absolutely no way I can come back to Baylor unless I get some type of scholarship to help me," Ben told the office manager in the Geology Department. "I've kept up my grades, but I don't have the money."

"Oh, didn't you get my e-mail?" she replied. "You were just awarded $12,000."

Ben's jaw hit the floor. In an instant, his future became accessible. Because donors like Jim and Lisa Meyerhoff and the Lula Pace Foundation chose to give, Ben would have the chance to pursue geophysics at Baylor—something he never dreamed possible.

Now a Baylor senior, Ben has embarked on a two-year research project that allows him to apply the physics techniques learned in the classroom as he and other students study rifting and seismic activity near the Texas coast.

"I'm getting direct experience. We are digging holes, setting up seismometers and recording data," Ben said. "I'm going through the entire process that geophysicists might go through when they are doing this type of project in the industry."

Ben is researching alongside professors and gaining hands-on experience in his field—all benefits unique to Baylor's Geology Department.

"My experiences at Baylor are preparing me for anything I will experience outside of Baylor in my career," Ben explained. "I'm getting an excellent education because scholarships made it possible."

A Glimpse of the Future

Just weeks ago, John McFadden was sleeping under the stars. His bedroom walls were the scenic mountains of Colorado, Utah, Wyoming and New Mexico. Rising early and going to bed late, John spent his days mapping geologic boundaries, investigating water chemistry and interpreting the deposition of rock formations.

A Baylor senior, this was John's field camp experience—six weeks of intensive hands-on research with qualified professors and eight other students anxious to make discoveries.

"The classroom setting cannot give you the experience you get in the field, actually seeing different lithologies

and rock types and being able to make interpretations and conclusions from what you see," John explained.

But field camp is only a glimpse of John's Baylor experience. The diversity of geology classes and the wealth of wisdom from his professors have shaped his future. Because of Baylor, John can dream.

"Before I came to Baylor, I had no idea where my life was going, but now I feel more sure of myself… confident," John reflected. "Since I'm doing well at this university, I feel like I can succeed in a career."

Maintaining a 4.0 in all of his geology classes and working diligently on every project, John's hard work is driven by the realization that he could not be at Baylor without scholarship support. When John first set foot on Baylor campus, he knew it was the perfect university for him. Pairing academic excellence with a love for God, John was ready to dive in. But affordability was the bottom line.

Receiving the Wendlandt Assistantship among other scholarships opened Baylor's doors for John. Now, he has benefitted from not only challenging courses in the classroom, but also training on the field that has prepared him to tackle the Earth's unknowns and pioneer new technologies.

"If I could meet my scholarship donors face-to-face, I would say, 'Thanks for my future,'" John mused. "'Thank you for keeping the doors open. That's what scholarships have done for me.'"

If you are interested in helping students like Ben and John reach their dreams, contact Eric Abercrombie, director of development, at (254) 710-2561 or visit www.baylor.edu/give to make a gift to the Geology Department online.

BRIAN CLARK
Outstanding Young Alumni

Brian R. Clark (MS-2000) has been selected as an Outstanding Young Alumni for Baylor University. Brian is the Chief of Information Management and Software Development at the U.S. Geological Survey (USGS) in Little Rock, Arkansas with responsibility over all information technology related installations and support. He concurrently serves as the Geographic Information Specialist at the USGS proving support for database construction, project management planning, and

Brian, Kandra, Kadin, & Kadri Clark

web-application design. He also recently served as adjunct faculty at the University of Arkansas at Little Rock as Instructor of Hydrogeology. He has led water resource investigations of groundwater and surface water computer model simulations in nine states and six countries.

Brian began his career in water resources with a water well construction company in Arkansas where he installed pumps and drilled wells. He attended Arkansas Tech University, receiving a BS in Physical Science (1998). While at Arkansas Tech, his interest in subsurface structure and processes led to a minor in geology where Dr. Steve Kline, Associate Professor of Geology, took the initiative to convince Brian to apply to graduate school. After acceptance into the graduate program at Baylor, Brian was married to his wife Kandra in 1998, and they moved to Waco just two days later.

While at Baylor, Brian served as the both lab instructor and manager of the departmental drill rig. Brian was an excellent student at Baylor (4.0) and his thesis applied groundwater modeling techniques to potential contaminant movement from the Naval rocket fuel site near McGregor. He presented these findings at the Geological Society of America annual meeting in Reno, Nevada in 2000.

After graduation from Baylor, Brian and Kandra lived a short while in Springfield, Missouri before accepting a position as a hydrologist at the USGS in 2001. Four apartments and two houses later, Brian and Kandra are blessed to have two incredible children, a boy and a girl ages 5 and 1. Together, they enjoy gardening, cooking on open flame, and most activities related to water.

Brian's publication record distinguishes him as outstanding and he has become a major contributor to the groundwater modeling efforts in Arkansas. Brian has authored or co-authored over a dozen USGS reports and has presented various work at over 19 professional conferences for 13 entities in 11 states with audiences ranging from students and water resource managers to an Army Colonel and Brigadier General.

Brian Clark, cont.

Publications

Clark, B.R., Hart R.M., and Gurdak, J.J., in Review, Groundwater availability of the Mississippi Embayment Regional Aquifer System: U.S. Geological Survey Professional Paper

Clark, B.R. And Hart, R.M., 2009, The Mississippi Embayment Regional Aquifer Study (MERAS): documentation of a groundwater-flow model constructed to assess water availability in the Mississippi embayment: U.S. Geological Survey Scientific Investigations Report 2009-5172, 62 p.

Clark, B.R., Landon, M.K., Kauffman, L.J., and Hornberger, G.Z., 2008, Simulations of ground-water flow, transport, age, and particle tracking near York, Nebraska, for a study of transport of anthropogenic and natural contaminants (TANC) to public-supply wells: U.S. Geological Survey Scientific Investigations Report 2007-5068, 49 p.

Czarnecki, J. B., **Clark, B. R.**, and Reed, T. B., 2003, Conjunctive-use optimization model of the Mississippi River Valley alluvial aquifer of northeastern Arkansas: U.S. Geological Survey Water Resources Investigations Report 03-4230

Czarnecki, J. B., **Clark, B. R**., and Stanton, G. P., 2003, Conjunctive-use optimization model of the Mississippi River Valley alluvial aquifer of southeastern Arkansas: U.S. Geological Survey Water Resources Investigations Report 03-4233

Hart, R.M. and **Clark, B.R.**, 2008, Geophysical log database for the Mississippi Embayment Regional Aquifer Study (MERAS): U.S. Geological Survey Scientific Investigations Report, 2008-5192, 9 p.

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Jagucki, M.L., Landon, M.K., **Clark, B.R.**, and Eberts, S.M., 2008, Assessing the Vulnerability of Public-Supply Wells to Contamination:

High Plains Aquifer Near York, Nebraska: U.S. Geological Survey Fact Sheet 2008-3025, 6 p.

Johnson, R.L., **Clark, B.R.**, Landon, M.K., Kauffman, L.J., and Eberts, S.M., in Review, Modeling the impact of seasonal and inactive multi-aquifer wells on contaminant transport to public water-supply wells: Journal of the American Water Resources Association

Kresse, T.M. and **Clark, B.R**., 2008, Occurrence, distribution, sources, and trends of elevated chloride concentrations in the Mississippi Rivery Valley alluvial aquifer in southeastern Arkansas: U.S. Geological Survey Scientific Investigations Report 2008-5193,

Landon, M.K., **Clark, B.R**., McMahon, P.B., McGuire, V.L., and Turco, M.J., 2008, Hydrogeology, Chemical-Characteristics, and Transport Processes in the Zone of Contribution of a Public-Supply Well in York, Nebraska, U.S. Geological Survey Scientific Investigations Report 2008-5050.

McKee, P. W., **Clark, B. R.**, and Czarnecki, J. B., 2003, Conjunctive-use optimization and sustainable-yield estimation for the Sparta aquifer of southeastern Arkansas and north-central Louisiana: U.S. Geological Survey Water Resources Investigations Report 03-4231

McKee, P. W. and **Clark, B. R.**, 2003, Development and calibration of a ground-water flow model for the Sparta aquifer of southeastern Arkansas and north-central Louisiana and simulated response to withdrawals, 1998-2027: U.S. Geological Survey Water Resources Investigations Report 03-4132

Stanton, G. P. and **Clark, B. R**., 2003, Recalibration of a ground-water flow model of the Mississippi River Valley alluvial aquifer in southeastern Arkansas, 1918-98, with simulations of hydraulic heads caused by projected ground-water withdrawals through 2049: U.S. Geological Survey Water Resources Investigations Report 03-4232

Selected Abstracts and Proceedings

Clark, B.R., Landon, M.K., Kauffman, L.J., and Hornberger, G.Z., 2006a, Simulation of solute movement through wellbores to characterize public supply well contaminant vulnerability in the High Plains Aquifer, York, Nebraska: International Ground Water Modeling Center: Modflow and More Conference, May 22-24, 2006, Golden, Colorado.

Clark, B.R., Landon, M.K., Kauffman, L.J., and Hornberger, G.Z., 2006b, Simulation of short circuit flow paths and transient conditions to understand vulnerability of public supply wells to contamination in the High Plains Aquifer, York, Nebraska [abs.]: 2006 National Monitoring Conference: Concurrent Session G: G3 Assessing Ground Water Vulnerability Through Mechanistic Methods III, May 7-11, 2006, San Jose, California.

Clark, B.R., Scheiderer, R.M., and Bryson, J., 2007, Extent of aquifers and confining units in Arkansas: A web based stratigraphis database [abs.]: 2007 Ground Water Summit: Concurrent Session: The Internet as a Data Source for Ground Water Problem Solving, April 29-May 3, 2007, Albuquerque, New Mexico.

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Landon, M.A., and **Clark, B.R.**, 2005, Use of depth-dependent sampling to refine understanding of source areas and short-circuit pathways for contaminants to reach public supply wells, High Plains Aquifer, York, Nebraska [abs.]: AGU Fall Meeting, December 5-9, 2005, San Francisco, California.

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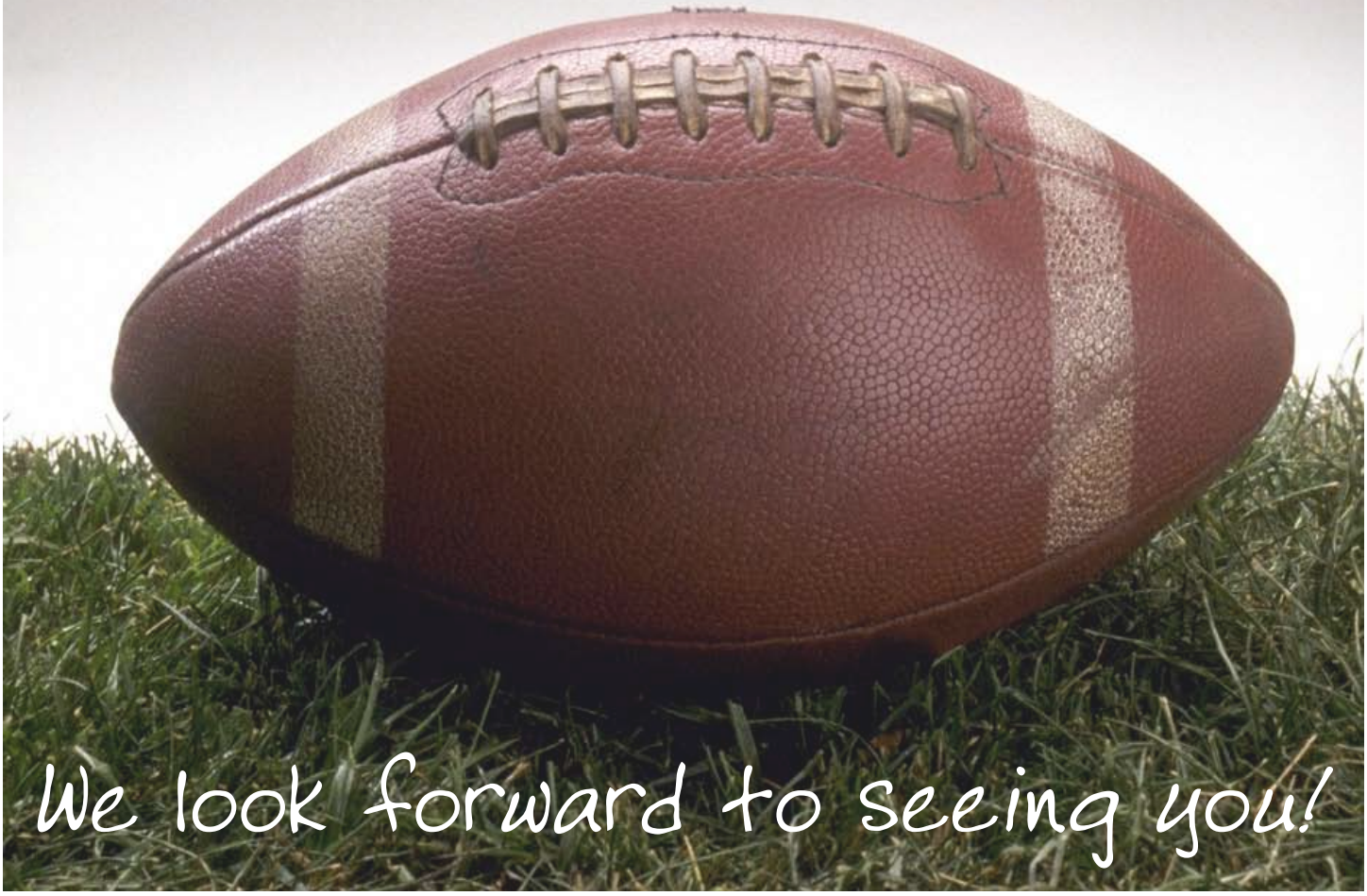
TIME FOR TAILGATING!

The Baylor Geological Society & The Geology Advisory Board cordially invite you and your family to join us for food and fellowship as we host a Geology tailgating party at all home games this 2010 Baylor football season.

We will be located off of Dutton Avenue on the South End Zone. Look for the Geology van. Each tailgate will begin two hours prior to kick-off.

Home Game Schedule:
09/04/10 vs. Sam Houston State (6 p.m.)
09/11/10 vs. Buffalo (6 p.m.) – Parents' Weekend
10/02/10 vs. Kansas (TBA)
10/23/10 vs. Kansas State (TBA) – Homecoming
11/13/10 vs. Texas A&M (TBA)
11/20/10 vs. Oklahoma (TBA)



WHERE ARE THEY NOW?

William (Bill) Atlee (BS 1958, MS 1960) and his wife, Linda, now happily enjoy retirement in Del Webb's Sun City, Georgetown, Texas, "where the deer and the old folks play."

Sarah Gilbert (BS, 1989 MS, 1992), after approximately 16 years in the Austin area doing environmental consulting for various engineering firms, has recently relocated to San Antonio for a new position with Booz Allen Hamilton as DOD consultant.

George F. Naryshkin (BS 1981) writes, "Although I am not practicing geology, I was infected by O.T. Hayward and torture my friends with my 'truth seeking' in science."

Ryan Rosser (BS, 2000) is now working as a RCRA enforcement officer for the U.S. Environmental Protection Agency, Region 6.

Janna (Stricker) Walters' (BS, 1984) son, Micah, (19) has successfully completed a second round of cancer treatment for rhabdomyosarcoma. He has endured a total of 96 weeks of treatment, radiation, and multiple surgeries. Praise the Lord – he is a survivor. You can find Janna on Facebook.

Congratulations to…

Mike and Alison (Jones) Nguyen on the birth of their daughter, Lindsey Bach-Tuyet Nguyen, on May 4, 2010.

Alan and Minda Gunnell on the birth of their son, Nathan, on June 8, 2010.

Stephen and Natalie Clark on the birth of their daughter, Angelina Jean Clark, on July 13, 2010. She weighed 7lbs. 1 oz. and is perfectly healthy.

Condolences to…

The Hayward family on the passing of **Harriet Hayward** on November 2, 2009 at the age of 87. Hayward, a Waco native, held degrees as diverse as a commercial art certificate from the Ray School of Art in Chicago, engineering management from the University of Chicago and a bachelor's in fine arts from Baylor University. At the Santa Fe Institute of Fine Arts in New Mexico, she studied with such artists as Wayne Thiebauld, Lee Mullican, Richard Diebenkorn, Nathan Olivera and Nancy Graves. She was artist-in-residence at Art Center Waco, J.H. Hines Elementary School and Midway Elementary School, and taught at MCC, Baylor and the Waco Creative Art Center. Harriet is survived by her husband, Dr. O.T. Hayward, and children Kate, Tim, and Chris.

To the family of **Mark T. Owen** (BS, 1975 MS, 1977) who passed away on December 22, 2009 at the age of 56 in Midland Texas. Owen served as a geologist and vice president of exploration to George W. Bush with Bush Exploration, and was working for Griffin Petroleum Company before he passed away. He was a avid outdoorsman, actively involved member of the NRA and West Texas Geological Society, and a published author.

David and Mary Durler and family on the passing of their son, Stephen Durler, on June 2, 2010. Stephen was an AMP aircraft mechanic for Careflight in Dallas, Texas.

Dr. Ken and Celia Carlile and family on the passing of Ken's mother, Mildred Cornelius Carlile, on August 4, 2010.

Unfortunately we did not know this at the time, but condolences to the family of **Dr. Thomas H. Waller** (MS 1966) who passed away in 2004 with ALS.

WHERE ARE YOU NOW?

We would love to know! Please complete the form on the back, fold in half, place a stamp, and put it in the mail. We will use this information to update our departmental files. You can also email your information to: Paulette_Penney@baylor.edu.

Also, remember we have the "Geokid" bulletin board in the office with photos of children of Alumni, so send your pictures to Paulette_Penney@baylor.edu.

_____

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PLACE
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PERSONAL INFORMATION SHEET
DEPARTMENT OF GEOLOGY

Name: _____ Class: _____

Degree(s): _____

Phone: _____ Email: _____

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Type of Work: _____ Location: _____

Company Name: _____

Family Information: _____

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_____

Would you like to share information in the Homecoming Newsletter Section, "Where Are They Now?" Yes ___ No ___ If yes, write information here: _____

_____

_____

Are you willing to speak to the Department?

Yes ___ No ___If yes, write topic here: _____

_____

_____

Suggestions: _____

_____

_____

GEOLOGY OPEN HOUSE

Please join us!

Friday, October 22, 2010
7:00–9:00 pm
Baylor Sciences Building, E401

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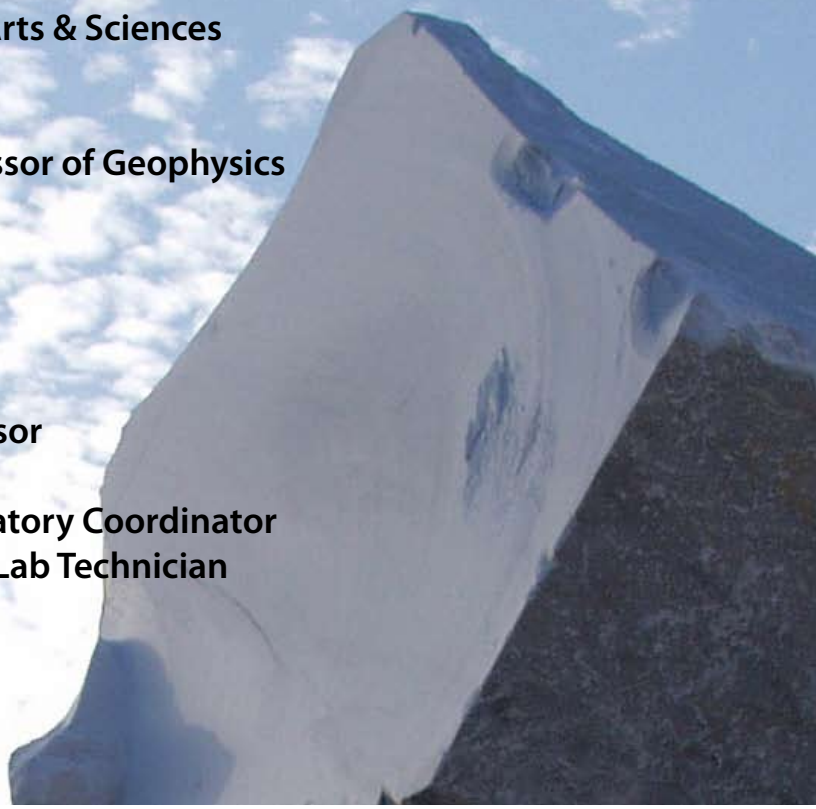
BAYLOR UNIVERSITY | DEPARTMENT OF GEOLOGY



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