A Message from the Head: Dr. Estella Atekwana

Greetings to all alumni and friends of the Boone Pickens School of Geology at Oklahoma State University! After a national search, I was named the new Head of the Boone Pickens School of Geology. As many of you may already know, I joined the Boone Pickens School of Geology in the fall of 2006 after spending seven years at the University of Missouri-Rolla (now Missouri University of Science and Technology) and ten years at Western Michigan University where I began my academic career. In 2011, I became a Regents Professor of Geology. At OSU, I served as the graduate coordinator for six years before becoming the new head. I am honored to be serving in this position and hope to build upon the foundation laid by Dr. Jay Gregg. I want to take this opportunity to salute Dr. Gregg for a job well done.

My vision is to continue where Dr. Gregg left off and to increase the visibility of the School nationally and internationally by growing and strengthening our academic programs, increasing scholarly productivity, improving student performance/success, increasing interaction/partnerships with industry and working with the school’s alumni advisory board to increase participation of our alums and friends in school activities. Such a partnership is necessary in making the Boone Pickens School of Geology one of the top tier geosciences programs in the nation. We have turned the corner and are now poised to do great things as a school with your support.

This has been another great year for the Boone Pickens School of Geology. Our students, faculty and alums (see articles in this issue) continue to win honors on campus and at national meetings; publish groundbreaking research and bring in record funding in the history of the School. We also successfully launched the Mississippian Consortium (see article in this issue). We are in the final stages of launching an
unconventional hydrocarbon research center in collaboration with the College of Engineering. We saw record numbers of our faculty and students attend national meetings. We took the national GSA meeting by storm and had 21 presentations authored and co-authored by students and faculty; 11 presentations at AAPG mid-Continent; 4 presentations at SEG; and 8 presentations at AGU. With the talented faculty that is now in place, the recruitment of talented students and the resources to carry out our research and teaching mission, we are definitely a department on the rise! Thanks to the support of the alumni and friends and the university our School has experienced tremendous growth in faculty (14 plus undergraduate advisor), students (213), and research grant awards in 2013. Also, for the first time ~60% of graduate student support was raised through faculty research grants and alumni donations in the form of scholarships and fellowships. With the three new endowed chairs (Dr. Mohamed Abdelsalam, the Pickens Chair of Geophysics, Dr. Michael Grammer the Chesapeake Energy Corporation Chair of Petroleum Geoscience and Dr. Jack Pashin the Devon Chair of Basin Research) now in place we are experiencing record numbers of applications and inquiries to our graduate program. We are essentially bursting at the seams. This has allowed us to be more selective bringing in top graduate students into our program. Our graduate students come from 25 different states and from 17 different countries; we are presently able to admit only 26% of applicants into our graduate program.

Undergraduate enrollment stands at 135, a slight drop from 140 in 2012. However, we saw the largest graduate class we have had in the last decade – 77 students - up from 66 in 2012. By the fall of 2013, we had 16 Ph.D students and 61 M.S students enrolled in the School. We continue to improve the quality and caliber of our graduate students and expect them to be successfully integrated into the work force or continue on to graduate school. This year, applicants to our graduate program came from many different sStates and several countries aboard. The completed applications number more than 125 at the moment of this writing. Many of the applicants have excellent credentials; however, we are limited by funding and may only admit about 15%.

The number of B.S. degrees awarded in Geology was 17. We graduated 7 students with M.S. degrees which is down from 21 in 2012. We graduated 1 PhD student in 2013 and we have 2 Ph.D. students expected to graduate in 2014.

Geology faculty were awarded about $1.9M in new grants between January 1 2013- December 31 2013. The $1.9M in research grants in 2013 stands as the largest ever in the history of the School (Please see article on research award abstracts).

After several years of petitioning for a professional undergraduate advisor, we were finally awarded a position that is shared with Chemistry and Physics (however, Geology has the majority of the students). In August Ms. Sheri Orr joined the department as the new undergraduate advisor and is housed on the 4th Floor in NRC right next to Dr. Puckette’s office. For the first time in decades Dr. Puckette does not have 135 students to deal with and can finally spend more time on projects and courses. Ms. Orr has been a tremendous addition and asset to our program (read more about Ms. Orr in this issue).

Finally 12 companies participated in our fall recruitment program. These companies included Chaparral, Chesapeake Energy, Concho, Denbury Resources, Devon Energy, EOG, Laredo Petroleum, Linn Energy, Noble Energy, QEP, Samson and SM Energy. We thank these industry partners for their continued support of our program. In addition students participated in the SEG Student Expo in Houston and in Rocky Mountain Rendezvous in Laramie, Wyoming.

In summary, we had a great year, thanks to the hard work of the students and faculty and generous support of our alums.
Field Camp 2013: The Year of the Fire

The 2013 field camp was unforgettable in that this was the first time that we were forced from the field by fire. As a result of the prolonged drought in the southern Rockies, we have been aware of the dangers of fire. In past years, smoke from fires in New Mexico, Arizona and southern Colorado created air-quality issues, but this year the Royal Gorge Fire resulted in an evacuation order along Temple Canyon Road and forced us to leave the Mixing Bowl. The Gorge Fire as it came to be called started south of the Royal Gorge and quickly moved northward on gusty winds, jumped the canyon and burned most of the buildings in the park. Luckily, the animals were spared and fire was stopped in the Priest Canyon mapping area by the change in wind direction and the dumping of large volumes of flame retardant. From the Mixing Bowl, which is located approximately 5 miles to the east-southeast of Royal Gorge, we watched the smoke column grow as the fire expanded. Though we were never in danger from the Gorge Fire, the evacuation area included the Bowl and the Fremont County Sheriff’s Department requested we leave the area. The OU students were in the Bowl at the same time and vans from both camps were used to shuttle students to the safety of the parking area at the Cañon City Eco Park, known to many vintage geologists as the Cañon City Dump and the entrance to the Grape Creek section. Fortunately, the Gorge Fire was stopped before it reached U.S. Highway 50 and Twin Mountain. Though we were not allowed to return to the Bowl due to the closure of Temple Canyon Road, the rest of camp was completed without difficulty.

Enrollment in 2013 was fifty-eight students. Students from fifteen different colleges and universities attended including twenty-one from OSU, and thirty seven from the other fourteen schools included Angelo State, Central Michigan, Georgia Southern, Indiana-Purdue Fort Wayne, James Madison, Midwestern State, Rutgers, Sam Houston State, Texas A&M Kingsville, TCU, Temple, University of Colorado, University of North Carolina Chapel Hill, West Texas State. Our outstanding teaching assistants were Chris Geyer and Andrew Katumwehe. Our camp maintenance man was Rawlings Akondi, who also assisted with field trips and the geophysics project. Tim Sickbert served again as our capable medical officer and fortunately only had to deal with minor complaints. Our two capable cooks, Ms. Michelle Leach and Ms. Jana Van Pelt, kept the kitchen running smoothly and provided tasty, healthy and filling meals. Michelle and Jan were assisted by Rawlings and Jon Fields, who have added dishwasher to their lists of many talents. Fulltime faculty were Chester Wallace, a retired Colorado mapper, Rick Hobbs from Amarillo College, George Bolling from University of Colorado-Colorado Springs and Jim Puckette.

Ms. Tiny Striegel of Canon City visited her camp family each week and entertained all with her poetry and camp history. Tiny welcomed the students to camp and assured them that they would be successful and enjoy the experience.

Field projects in 2013 included Phantom Canyon/Gnat Hollow, Grape Creek, Mixing Bowl, Big Orange, Red Canyon Park, Blue Ridge and Twin Mountain. Field trips included Cripple Creek and Victor, Pikes Peak, Great Sand Dunes National Park, and Leadville. Under the guidance of Andrew, Rawlings and Tim Sickbert, the geophysical exercise concentrated on imaging the alluvial aquifer along Eightmile Creek where it crosses the camp property. Due to high demands for water early in camp, we purchased water from town and filled the cisterns. Our hope is that a wet spring will cause Eightmile Creek to flow again and fully recharge the aquifer. Thanks to a generous contribution from Mr. Terry Clay, a new commercial side by side refrigerator was added to the kitchen serving area. These improvements are necessary and welcome as we filled the 2013 camp in October 2012.

Field Camp Reunion

The summer of 2014 will mark the 65th anniversary of field camp. Visitors are always welcome anytime camp is in session, but this summer we will host a reunion Friday June 6 and Saturday June 7. Activities will include a cookout on Friday evening, a tour of selected field areas during the day Saturday and a program of reminiscing and feasting that evening.
2013 RECOGNITION & AWARDS

Mr. Rick Fritz, wins Arts & Sciences Distinguished Alumni Award. Pictured from left to right is Dr. Bret Danilowicz, Dean of Arts & Sciences, Mr. Rick Fritz and Dr. Estella Atekwana (Head of BPSoG)

Dr Jim Puckette was awarded the Excellence in Advising Award. The award is being given by Dr. Shiretta Ownbey, Associate Dean, Academic Programs and Service, College of Human Science.

OSU PhD student Khemraj Shukla paired with Brandon Lutz (University of Alabama) came in 3rd overall and 1st place in the US at the SEG 2013 Challenge Bowl. Congratulations Raj!


NEWS ABOUT THE MISSISSIPPIAN CONSORTIUM

The Mississippian Consortium, evaluating the stratigraphy and reservoir distribution in the Mississippian Lime of the Mid-Continent, has made great progress in the first year. In addition to myself (Grammer), we had 4 other faculty members (Jay Gregg, Darwin Boardman, Jim Puckette and Priyank Jaiswal) involved in Year 1 of the project and will be incorporating help from Daniel Lao Davila in Year 2 with work utilizing LIDAR for modeling of outcrop. We currently have 12 sponsors (Chesapeake Energy, Devon Energy, Marathon Oil Company, Newfield Exploration, SandRidge Energy, Longfellow Energy, Red Fork Energy, Tip Top Energy (Sinopec), Chaparral Energy, Unit Corporation, SM Energy and Maverick Brothers Energy), and are hoping to get additional members for Year’s 2 and 3 of the project. At this time, we have 18 graduate students (7 PhD and 11 MS) and 6 undergraduates working on the project.

We had a strong showing at the Mid-Continent AAPG Meeting in October up in Wichita. The Mississippian group (faculty and students) from the BPSoG gave 9 presentations and 2 core workshops. In December, we had our Year 1 Annual review where more than 50 participants were present. Faculty and students gave a total of 22 presentations to the consortium members can conducted a core workshop overviewing our approach and initial findings. Year 1 was focused on enhancing our understanding of the biostratigraphic control through incorporation of additional
core and outcrop data sets, regional and field scale paleogeography and depositional environments, regional and field scale high resolution (i.e., below biostratigraphic resolution) sequence stratigraphy and reservoir characterization, 3D seismic analysis at the field scale and physical rock properties to evaluate susceptibility to fracturing, pore system architecture and relationship to permeability and how we might predict from sonic velocity response. In Year 2, we will continue this work and we will integrate diagenetic work fully with the facies and sequence stratigraphic data sets.

**SPOT LIGHT ON INTERNATIONAL RESEARCH**

By Eliot Atekwana

In summer 2013, Dr. Estella Atekwana and Dr. Eliot Atekwana, along with undergraduate students Landon Lockhart and Kyle Obenberger and graduate students Kathleen Robertson, Khumo Leseane and Mary Niles, conducted fieldwork in Zambia, Malawi and Botswana. Also participating in the field program were Dr. Kevin Mickus from Missouri State University and scientists and individuals from Zambia, Malawi and Botswana. The fieldwork was conducted under our National Science Foundation project on Integrated Studies of Early Stages of Continental Extension: From Incipient (Okavango) to Young (Malawi) Rifts, for which OSU is the lead institution in collaboration with Woods Hole Oceanographic Institution, Lamont Doherty Observatory, Missouri University of Science and Technology and University of Texas El Paso. We spent eight weeks in the field conducting research that should provide us with greater understanding of the nature of coupling between deep crustal processes (continental rifting) and with surficial processes. We formed two groups headed by Dr. Eliot Atekwana (Geochemistry crew) and another group headed by Dr. Estella Atekwana (Geophysics crew). The geochemistry crew included Kyle Obenberger and Mary Niles and was supported by locals and by the Zambia Wildlife Authority support staff and field officers. The geochemistry crew investigated hot springs, cold springs and streams for chemical and isotopic constituents in an attempt to figure out if material, especially gases from deep crustal sources, were released to the near-surface environment. The overarching goal was to provide evidence for the coupling between deep and shallow crustal processes. We anticipated that this connection will be found in hot springs, since surface water that flow deep underground to be heated may likely pick up material released from the deeper crust. A comparison with cold springs and surface water is expected to allow us to tell which chemical constituents unique to hot spring can be associated with deep crustal processes. At each sampling location, we measured water temperature, electrical conductivity, total dissolved solids, alkalinity and silica. We collected water that was later used to make measurements of major and minor anions, cations and metals, and stable oxygen, hydrogen and carbon isotopes in our laboratory at OSU. The hot springs we investigated were located in all kinds of terrain: from the rift valley floor, along faults, along river valleys, and along the beaches of Lake Malawi. This survey took us deep into the wild in Zambia, Malawi and Botswana. For about 5 days a week, the geochemistry crew drove for about 8-10 hours a day, sometimes covering as little as 50 miles in the wild with virtually no roads and sometimes as far as 400 miles between major towns. By the end of the survey, it is estimated that the geochemistry crew travelled about 10 thousand miles.

In addition to the field and laboratory work, we will be leading a members-only multi-day field trip to the outcrops utilized in our study towards the end of April or early in May, then have a modern carbonates trip to the Bahamas and South Florida planned for next September. In March of 2014, the Mississippian group will be presenting some 8-10 technical papers on non-proprietary aspects of our work, and we also will be presenting at this year’s AAPG-ACE meeting in Houston (2-3 papers) and again in August at the AAPG Unconventional Expo in Denver.

**OSU students in South Luangwa National Park with hippos in the background. Khumo Leseane (left); Landon Lockhart (center) and Kat Robertson (right).**

The Geophysics crew consisted of Landon Lockhart, Kathleen Robertson, Khumo Leseane and Kevin Mickus. In Zambia, they were supported by locals and in Malawi they were supported by scientists from the Malawi Geological Survey. The Geophysics crew conducted global positioning satellite (GPS) enabled topographic survey along with magnetic and gravity surveys along three transects in Zambia and two transects in Malawi. In each of the transects, three sets of measurements were taken about every mile. We covered on the average 100 miles per day and in all, covered total distance of more than 2000 miles, which we covered by working 5 days a week from about 8 in the morning to 5 in the evening.
In both the geochemistry and geophysics surveys, we got to see extensive parts of this portion of subtropical Africa. The geology was amazing, the topography was highly varied, and the vegetation especially in the valleys was lush. Even the air was fresh. The trip was extremely enjoyable and the people were very friendly. We were exposed to varied cultures and the multitudes of activities going on, especially in the markets in the many places we visited. We found it strange especially in Zambia that there were fires all over the place. For the most part, people did not seem to care as they walked past raging fires. On questioning some of the locals, they indicated that fires were set during the dry season to avoid the bigger fires that may result in the main dry season; thus a preventative measure.

Preliminary results of the geochemistry and geophysics surveys were presented at the Geological Survey of America Annual meeting in Denver, CO and at the American Geophysical Union Annual meeting in San Francisco, CA.

ALUMNI COMMITTEE CREATES PETROLEUM WATER RESOURCES COURSE

By Todd Halihan

The 2013 IPWRM students visit Dr. Wayne and Phyllis Pettyjohn’s home along with the guest speakers, Jerry and Mike Thornhill.

NEWS FROM THE FACULTY

Dr. Mohamed Abdelsalam

Hello everyone. I am starting my second year in the Boone Pickens School of Geology at Oklahoma State University and I am looking forward to many years to come. I joined the School as the Boone Pickens Chair of Applied Geophysics and Professor of Geology in the fall of 2012 coming from the Department of Geological Sciences and Engineering at Missouri University of Science and Technology. My family and I have settled down nicely in Stillwater and we enjoy being part of the School’s family.

Last year I taught four classes: Physical Geology with ~250 students, Plate Tectonics with ~40 students, Structural Geology with ~35 students and Spectral Signal Processing with 6 students. I have enjoyed teaching these courses, especially going back to teaching Structural Geology after seven years. It is great to see that the enrollment in the School of Geology is growing and that there is an increasing interest in geology. The interest in geology finally reached my family. My daughter Hala is now taking courses at Oklahoma State University preparing herself to enroll in the MS program at the School of Geology.

I became the graduate advisor at the School of Geology starting July 2013 and I think I have passed the steeper part of my learning curve. We are seeing an amazing increase in the interest in our graduate program. We have received over 100 applications for the fall 2013 and spring 2014 admission. Many of these applications are of high-quality and the students come from schools in all parts of the US as well as other countries. Currently, our enrolled graduate students are from half of the states in the US in addition to 20 other countries.

I couldn’t be more excited about my research than now. My colleagues Drs. Estella Atekwana and Daniel Laó Dávila and I formed a Tectonics research group that involves 4 PhD and 5 MS students. We have funding to keep us going in the next two years, but we have also been very active in trying to secure future funding. So far we have a number of proposals submitted to National Science Foundation (NSF) to study different tectonic processes, especially continental rifting.

My Geodynamic and Geospatial Science Lab is now almost complete. It is great to see it is now populated with active graduate and undergraduate students. We have been working on enabling the lab for new technologies including SeroVision (for three-dimensional capture of geological outcrops using terrestrial photogrammetry) and Interferometric Synthetic Aperture Radar (InSAR) (for mm scale surface change including crustal deformation using Satellite RADAR data). We are currently in the process of acquiring 6 broadband seismic stations. Please come over and visit. I would love to hear from you regarding research ideas and how my lab and expertise can be of use to you.

On the family front, my wife Mahasin and our 4 children have adjusted nicely to life in Stillwater.
Greetings to all alumni and friends! I report to you a successful 2013. I served as the Interim Head of the School until June 2013. During my tenure, I enjoyed serving the students and the faculty and working closely with the Alumni Advisory Board to advance the agenda of the School. In all, I believe the School made important advances in 2013 (see the report from the Head).

I continue to teach, maintain an active research program and supervise students. This year, I taught Geology Colloquium in the spring and Geochemistry and Research Methods and Techniques in Geosciences in the fall. I also supervised MS thesis and Doctoral Dissertation in the spring and fall semesters. This year, our hands-on laboratory/field component to the Geochemistry course involved investigating the quality of bottled vs. tap water. The students were attempting to answer the simple question: “Should I drink bottle or tap water?” Tap water was collected from Stillwater, Oklahoma City, Tulsa, Kansas City, Denver and Huston. Bottled water included distilled, reverse osmosis water, spring water and carbonate water from various companies which were purchased within the State of Oklahoma. The data collected this year was combined with data collected in 2007 in the same course. The students who were divided into groups measured the pH, nitrate, chloride, alkalinity, calcium, magnesium, sodium and potassium concentrations in our geochemistry laboratory in the HBRC. The students compared their results with the drinking water standards and found that all the tap water samples were of high quality and comparable to the bottled water except for one bottled water sample with high nitrate. This exercise culminated into insightful reports about the project findings; the conclusion was that there was no advantage to drinking bottled water over tap water and based on the cost and environmental degradation (energy use, plastic material needed, plastic to be disposed, etc.) tap water was better for the environment. The report was designed to fulfill the writing component of the course.

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I published a paper with my PhD student Pride Abongwa in the Journal of Hydrology and with my MS student Eric Akoko in the journal Biogeochemistry. My students, collaborators and I presented six abstracts at the GSA annual meeting. My students Pride Abongwa, Scott Meier and Morgan Ostroski presented their research at the Oklahoma State 24th Annual Research Symposium on February 20-22, 2013 at the Stillwater Campus.

Dr. Estella Atekwana and I along with our students and collaborators continue to work on our projects funded by Chevron Energy Technology Company and the National Science Foundation. I continue to work with and mentor my students Pride Abongwa (PhD), Eric Seeger, Rawlings Akondi, Christopher Geyer, Stephanie Wiser, Mary Niles (MS) and Wes Rutelonis (undergraduate). I served on several MS and PhD thesis committees throughout the year and I graduated MS degree student Morgan Ostroski.

In international research, I worked with graduate student Mary Niles and undergraduate Kyle Obenberger on investigating the chemistry and stable isotopic composition of hot springs, cold springs and streams in Zambia, Malawi and Botswana. This is part of our National Science Foundation funded research “Collaborative Research: Integrated studies of early stages of continental extension: From incipient (Okavango) to young (Malawi) rifts”. In all, the field campaign was very successful (see spotlight on international research).

This year, I was one of two members of the Joint Technical Program Committee of the Hydrologic Division of the Geological Society of America. We helped put together the hydrology program for the GSA’s 125th Anniversary Annual Meeting & Expo in October 2013 in the Colorado Convention Center, Denver, CO. The entire meeting including the sessions sponsored by the Hydrology Division was very successful; the meeting as a whole was a blast.

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Please drop by to say hello when next in Stillwater or send me email if I can be of assistance to you.

Greetings to all alumni and friends!

I hope this newsletter meets you all in good health. I keep saying that this is the year that I slow down. However, this never seems to happen especially now that I have added on the responsibilities of the School Head. 2013 continued to be an extremely busy year for me as usual with lots of travelling to distant parts of the world. It was also a very exciting and productive year for me. We shut down our activities related to the BP Deep Horizon Oil spill project after Hurricane Isaac demolished our geophysical monitoring system. We finished processing the data and submitted a paper for publication which is currently under review in the journal Geophysics. Work continues on our Chevron grant and we have some very important discoveries that have resulted in the publication of two papers and three best paper awards. In August we presented the results of Year 2 activity to the remediation group at Chevron in Houston Texas. Chevron continues be very impressed with the work we are doing and this year our grant was renewed for another $300,000 for the third year. This is also the last year of the project. However, we hope that Chevron will continue the funding after year 3. This project has given us the opportunity to critically examine biogeochemical signatures at organic rich contaminated sites. We now have some ideas on how to extend this work to examining microbial induced geochemical changes in reservoirs as well as for exploration in frontier basins.

In March I convened a session on biogeochemistry at the Symposium for the Application of Geophysics to Environmental and Engineering Problems (SAGEEP 2013) in Denver. I also presented a paper on some of our results from the Chevron project on the role of biometallic magnetic minerals.
This paper was very well received and won the best paper award. As a result I was asked to present the paper at the European Association of Geoscientists and Engineers (EAGE) Near Surface meeting in Bochum Germany. So I spent a week in Germany in early September to present this paper. In June the students working on our Chevron project presented at the 2nd International Symposium on Bioremediation and Sustainable Environmental Technologies (Batelle Conference) in Jacksonville Florida. Both students won a “Best Paper Award” for their research presentation. My research scientist, Dr. Gamal Abdel Aal also presented his work on the “Influence of oil wettability (biodegraded and fresh) upon spectral induced polarization of oil-bearing sands” at the Batelle Conference. This work was recently published in Geophysical Journal International.

Our PRIDE project is going well. PRIDE is a 4-year project to understand fundamental geodynamic processes that initiate continental rift zones. To learn more about PRIDE visit the project website: http://seismo.device.mst.edu/PRIDE/. This summer we spent eight weeks in three different countries (Botswana, Malawi, and Zambia) conducting field research. This was one of those trips that almost everything that could go wrong went wrong. Our initial plans were to go to Botswana first and work with our collaborators from Woods Hole Oceanographic Institution to complete a large scale seismic refraction experiment across the Okavango rift. We had our bags packed and ready to go when we got a message from Botswana that the experiment had been halted by the government of Botswana because we did not have all the required permits for working in the Okavango Delta. The drilling crew was already in Botswana ready to drill the holes for the seismic shots. In addition, a day before we left for Botswana we got an email from the Zambian Geological Survey that they will not be participating in our project. This put a monkey wrench in our plans because they were supposed to provide us with logistical support such as helping with customs and providing transportation. Well, we still continued with our plans and approached the University of Zambia who saved the day and agreed to help us with the logistics. Eliot and I accompanied by five OSU students (Landon Lockhart, Mary Niles, Khumo Leseane, Kyle Obenberger and Kat Robertson) continued with our travel plans. We got to Atlanta only to find out that our plane to Johannesburg had a problem and had to be changed. This delay caused us to miss our flight from Johannesburg to Botswana and we had to spend the night at the airport. In the end, we got to Botswana after three days of travel and after a couple of days headed to Zambia to begin fieldwork. The fifth student Kyle Obenberger had to join us in Zambia because he had to complete field camp. Well, we got a call from Kyle indicating that he had missed his flight and Sandy had to scramble to find him another flight to Lusaka. To make matters worse about 200 km after we left Gaborone, Botswana heading for Zambia, one of our cars broke down and Eliot had to return to Gaborone to repair the car. I stayed behind with the students wondering if with the string of bad luck we were ever going to acquire any data. Despite all the hiccups we completed more than 4,000 km of gravity, GPS and magnetic measurements across the Luangwa and Malawi rifts. We spent four weeks in Zambia and another two weeks in Malawi before heading back to Botswana to catch our flight back to the US.

Malawi Rift was breath-taking and Malawi is truly the warm heart of Africa. If your travels ever take you to this part of Africa, Malawi is a must see and the South Luangwa National Park is a must for wildlife viewing. The Tanzanians and Kenyans may not like to hear this but I believe that Serengeti pales in comparison to the South Luangwa National Park.

I continue my duties as the Associate Editor for the Journal of Geophysical Research-Biogeoscience. This has kept me busy. I continue my work on the Advisory Board of the NSF sponsored Science and Technology Center “C-DEBI”, The Center for Dark Energy Biosphere Investigations at the University of Southern California and the NSF Funded program in Forest Ecosystems at Alabama A&M University. In October I spent two days at Monterey Bay attending a C-DEBI all hands workshop hosted by the University of Southern California as part of my Advisory Board duties. I have also been appointed a member of the GeoPRISMS (Geodynamic Processes at Rifted and Subducing Margins) Steering and Oversight Committee (GSOC). In December I attended the fall AGU meeting where I convened a session on continental rifting. We received more than 90 abstracts and had two full days on rifting talks and posters. My graduate student Khumo Leseane presented a paper on some of our first results from the PRIDE project. During the winter semester 2012, I taught a course on Gravity and Magnetic Methods in Exploration. I had a great group of students and we capped the course with a 2 1/2 day short course on Geosoft Oasis Montaj – An Integrated Exploration Platform for processing gravity and magnetic data with applications for oil and gas, mineral exploration and tectonic studies.

We are now well settled in our new state-of-the-art biogeophysics facilities in the Henry Bellmon Research Center. It is a fantastic facility and I encourage you all to drop by for a visit so that we can show you around. I now have two PhD level research scientists (Dr. Igor Brown and Dr. Gamal Abdel Aal) working in the lab. My graduate students are all doing well. My MS student Cameron Ross defended in February. Farag Mewafy, my PhD student graduated in May and is the third student to graduate from our PhD program. I have three new graduate students: Kitso Matende, Vincent Somwe and Kat Robertson.

I am enjoying my position as the School Head and yes, my research has had to take a back seat as I focus on the affairs of the School. I have a fantastic group of faculty who are doing a marvelous job with committees that help to make the School run efficiently.

On the home front, our kids continue to grow. Our oldest son Kyle will be graduating this May from OSU with a degree in Geology. Kyra is now a senior at Harvard University. She spent some time in Europe this summer doing research for her thesis. Kyne is now an 11th grader at the Stillwater High School. My nephew, Nissi is also an 11th grader at the Stillwater High. Please drop by my office to say hello when next you are in town or send me an email if you have any questions regarding my research.

Dr. Darwin Boardman
adding a Pennsylvanian Consortium to the research mix.

Additionally, I am supervising for masters theses and three doctorate students on projects related to the Mississippian. All of these are directly applicable to our research in the Mississippian Consortium.

During the spring, 2013 semester I taught Paleontology and Sequence Stratigraphy. I offered a new class Regional Stratigraphy of the Midcontinent in the Fall 2013 semester. This course combined, lectures, paper discussions, and three weekend field trips. These included a survey of Paleozoic Stratigraphy of the Ozark Mountains, Paleozoic Stratigraphy of the Arbuckle Mountains and Pennsylvanian Stratigraphy of the Northeast Oklahoma Platform. Oil and Gas Field applications were a primary focal point of the papers and field work.

I served on numerous thesis committees, while having one student Austin McMabb successfully defend his thesis. Three other students are on course to defend this spring including Beth Stevenson, Jared Morris and Joey Dineen. Among doctoral students Cory Godwin is on track to complete his dissertation on Middle Mississippian surface stratigraphy of the Ozarks this spring.

I will be leading a GSA Field Conference at the South-Central GSA meeting from March 14-16, followed by a Mississippian Field Conference for Consortium Members in May, 2014.

**Dr. Jeffrey Byrnes**

Over the past year, I have been continuing developing my courses, research program, and collaborations with external colleagues in industry and academia. In addition to my standard teaching responsibilities, I also helped develop and teach a course through a special program of the Oklahoma State Regents for Higher Education. The program paired me with the Chair of the Department of Geological Sciences at Indiana University, Dr. Lisa Pratt, for an interdisciplinary class entitled “Life on Mars?” that was open to students from any of the universities and colleges under the purview of the Board of Regents. Students representing a wide range of backgrounds participated and made for a rich educational experience for everyone involved.

My research efforts related to petroleum interests continued to increase over the past year. Notably, I spent three months in Houston at the ExxonMobil Upstream Research Company helping them develop some new capabilities. Although it was difficult being away from Stillwater and my family for such an extended period, I had an excellent experience in which I interacted with many exceptional scientists, learned a lot, and was able to conduct research that I otherwise do not have the resources to undertake. I have also had the opportunity to continue working with a small Texas-based exploration company, for which I get to synthesize geophysics, geochemistry, and geomorphology. Within the department, I currently am formally advising 1 Ph.D., 4 M.S., and 2 B.S. students in research projects ranging from hydrocarbon exploration and reservoir rock characterization to volcanology and geology of Mars.

On the home front, my son and daughter continue to impress me with their abilities in science and math, music and graphic arts, and language and sport. Both are in preschool and have more interests than time and energy allow. Best of all, they are always able to make me smile at the end of the day.

**D. Joseph Donoghue**

I have been busy over the past year establishing a sedimentology program and the sedimentology research lab. My research examines sedimentary processes and products in marine and aquatic environments, Quaternary paleoclimate, the sedimentologic effects of sea-level change, and environmental geology. Along with my colleagues and students, I published two journal papers on these topics in the past year, with two currently in revision, plus two articles in the forthcoming Encyclopedia of Estuaries. I’ve also served as co-PI on two NSF proposals submitted in the past year.

At OSU I have been teaching the Stratigraphy-Sedimentology course for our undergraduate majors (GEOL-3034), the Marine Geology grad/undergrad course (GEOL-5513/4413), the Quaternary Geochronology course (GEOL-5093) and the large lecture course Geology and Human Affairs (GEOL-1014). We are currently reconfiguring the GEOL-1014 labs for next fall to take advantage of the many new interactive geoscience materials available on the Web. We applied for and received an OSU Technology Fee grant to purchase two dozen new laptops and associated hardware to facilitate the GEOL 1114 lab upgrade.

I’ve been continuing the advisement of some remaining students at Florida State University, from which I arrived nearly two years ago. One of the PhD students graduated last year. A second one is due to finish at the end of 2014. A third should finish in 2015. One of the master’s students graduated this past December, and another one should finish next spring. I am currently also advising two master’s students at OSU, Tyler McNabb, and Mark McCollum, and have joined several graduate student committees in Geology and Geography. Both Tyler and Mark have made good progress on their thesis projects, both of which involve extracting paleoclimate proxies from the Quaternary sediment record.

In the fall I assembled ten faculty investigators from five departments (BPSG, Physics, Geography, Sociology, and Biosystems and Agricultural Engineering) to resubmit a proposal to the OSU Core Facilities Support competition. The proposal was for the development of an optically-stimulated luminescence (OSL) dating facility at OSU. The lab would serve OSU researchers and students who utilize this new dating tool, and would provide dates for external users on a fee basis. There is a strong need for such a facility in this region of the country. The proposal was well reviewed but funding was again hampered by the lack of a mechanism to support a dedicated technician. We are hopeful of trying to resolve the technician issue and develop the lab.

I served this past fall as the Geology PI on the successful UTeach proposal, which was funded this past fall for $1.4 million for five years. The UTeach program is a joint project between the Colleges of Education and Arts and Sciences. The program will develop teachers in the STEM fields, including geosciences, who are better prepared for the classroom. The students
Dr. Michael Grammer

It has been a very busy and rewarding year here in the School of Geology. The majority of my research lab is now in place with our research microscopes, photographic capability, computers, etc. already in, and an Ar-beam micro-polisher to be added in the near future. I have 5 active graduate students (1 Ph.D. and 4 M.S.) working with me, plus 2 undergraduates, all working on various aspects of carbonate sedimentology and reservoir characterization. Next year looks like another strong crop of students as I have received to date more than 70 queries from potential M.S. and Ph.D. students from numerous very strong programs both here in the U.S. and from around the world, about joining our group for Fall of 2014.

My graduate students and I continue to be heavily involved with work related to the Mississippian Carbonates Industrial Consortium (more detail on the Miss Consortium elsewhere in the newsletter). Beth Vanden Berg (Ph.D. student) is testing the relationship between pore type and permeability in micro- to nano-scale pores using ultra high resolution Field Emission Scanning Electron Microscopy (this is where the ion-beam polisher will come into play). Beth’s main goal is to test whether the relationship between porosity, permeability and sonic velocity response can be used to help predict permeability in carbonates from wireline logs and ultimately shed new insight into high resolution seismic interpretation. Buddy Price and Miranda Childress (M.S. students) are both working outcrop sections, utilizing a combination of high density vertical and lateral stratigraphic analysis for facies stacking patterns and high frequency sequence stratigraphic interpretation along with high resolution Gigapan imagery to map out bed geometry. The Gigapan allows us to measure beds on the cm scale from multi-gigabyte photographic images that have been “stitched” together – no more of the taping individual photos together to try and get a panorama that many of you will remember. On one of our outcrops, you can actually see ripple cross lamination from over 200 meters away with this technology! Stephanie LeBlanc and new student Taylor Thompson (both M.S. students) are focusing on subsurface data sets. Stephanie is working on developing a 4th and 5th order sequence stratigraphic hierarchy (i.e. below biotstratigraphic resolution) and trying to develop a reservoir scale model for reservoir flow units and seals. Taylor is evaluating the distribution of fractures in these rocks and determining if fracture density is related to either facies type and/or sequence stratigraphic positioning.

In June, I took 12 students on a week-long field seminar looking at modern and recent carbonates in Florida and the Bahamas, supported in part by funding from the College of Arts and Sciences. The highlight of the trip was the 4.5 days we spent on the R/V Coral Reef II, an 80 foot research vessel owned by the Shedd Aquarium in Chicago. The R/V CRII is based in Miami and makes for an outstanding platform from which to study modern carbonates in the Bahamas with excellent snorkeling and small boat facilities. We took the CRII from Miami to Bimini, visited the ooid shoal bars south of Bimini and the Cat Cays and evaluated the formation of carbonate grains, effects of wind and tidal currents and resulting sedimentary structures then related our findings to what a potential reservoir might look like in the subsurface. This approach was continued as we examined modern tidal flats on the west side of Andros Island, followed by numerous stops in the Joulters Cays ooid sand complex as well as patch and barrier reefs. Joulters is an outstanding place to examine field scale variability in carbonate sand bodies. It is a 400 km² complex of tidal channels, tidal passes, subtidal bars, islands, dunes etc. that provides the students a chance to see and understand many of the common features associated with carbonate sand plays in the subsurface. After returning to Miami, we then looked at Pleistocene equivalents of the ooid sands and reef deposits in Miami and the Florida Keys. This would be a great “alumni”; trip if any of you are ever interested. Just let me know.

In addition to working on the Mississippian project with my students and faculty colleagues and taking trips to the Bahamas, I taught courses in Earth History/Historical Geology, a graduate and senior undergraduate course in Carbonate Depositional Systems and am currently teaching a graduate course in Integrated Carbonate Reservoir Characterization. I also taught two one week short courses in carbonate reservoir characterization for Petroskills, one in Muscat, Oman for PDO and the other in London with participants from 10 different locations around the world. I feel this is a great way to get the word out on what is happening here at OSU and has led to a number of student applications who are coming from companies in the Middle East and Europe. In June of this year I will be running a Paradox Basin trip for Chevron and Petroskills, and then doing other reservoir characterization courses in London as well as possibly in Calgary this summer.

Other news of note: Two of my former students won Best Poster Awards for their presentations (in the Professional Sessions) at meetings this year. Seth Workman (M.S.) for his work on the Eagleford at the Eastern Section AAPG, and Jason Asmus (M.S.) for his work on the Bone Springs in the Permian Basin that we presented at the GCAGS meeting in New Orleans. Both Jason and Seth have accepted full time employment with EOG Resources, in Midland and Tyler respectively. We continue to get a lot of interest from several petroleum companies for the type we are doing, and I hope that our group is successfully integrating with and adding to the overall expertise of the School. As an example, my current students have either already done (at least one) internship or will be doing internships this summer. Companies they are working with include ExxonMobil, Chesapeake, Devon, Occidental and Linn Energy. I have also been talking with several colleagues here in the BPSoG about additional consortia ideas, so keep a look out for next year. Lastly, after a trip orchestrated by the OSU foundation (Lisa Capone and Lauren Kidd) to visit alums in Houston this past Fall, we were able to obtain a $500K submarine AUV data set from the Gulf of Mexico for research and teaching purposes (many thanks to Gary Humphrey and Dan McConnell of Fugro for helping us with this donation from a BP consortium).

As always, if you are visiting OSU and Stillwater, please stop by if you have a few minutes. I would love to meet more alumni and tell you a bit more about what we are doing.
Greetings to all of the alumni and friends of the Boone Pickens School of Geology. From January until mid-August 30 on sabbatical leave in the Netherlands. (Actually, my sabbatical began in July of 2012.) I spent those seven and a half months working for Royal Dutch Shell on their Carbonate Research team in Rijswijk, The Netherlands. I commuted every day by train from the city center of Den Haag (The Hague) where I lived. Without going into too much detail, most of my work concerned mechanisms of dolomitization and dolomite petroleum reservoirs. I was able to complete several projects on that general theme for the company during that time. I was working with a great group that included both senior scientists as well as several newly minted PhDs. The experience was quite valuable and gave me a new perspective on the research direction and needs of a major oil company.

This was not the first time that I have lived in a major European city. During 1995-96 I spent a year living in Dublin, Ireland with my family while a Fulbright Scholar at University College Dublin. In many ways living in Den Haag was similar to Dublin but culturally the two cities are quite different. And of course The Netherlands is very different from Oklahoma! Den Haag must be the most international city in the world. It not only is the seat of the International Court of Justice and the International Criminal Court, the seat of the Dutch government, it hosts many United Nations offices, and many international corporations. The latter includes the world headquarters of Shell which was walking distance from my apartment (though I worked in the research complex in Rijswijk). In Den Haag one can hear every language in the world spoken, sample every kind of food, and walk through neighborhoods with a mix of peoples of every ethnicity to be found on the planet. Further, as would be expected in a well-ordered Nordic country (we expat Americans called it Germany-lite) the public transportation system was astonishingly good (I did not own or miss having a car) and there was almost no crime. Certainly no violent crime; I could walk in safety anywhere in the city. There were other aspects of the country that reminded me that I was not in Oklahoma. The Sky High “Coffee” Shop, was just around the corner from my apartment and I had to walk by the red-light district to reach a Turkish grocery where I could buy fresh baklava (I became addicted to baklava). And no, I did not partake in the other two vices that were on offer (even though quite legal in The Netherlands). Language was no problem as almost all of the Dutch speak very good English and English is the Lingua Franca in Den Haag, including at Shell. I tried to learn but I fear that the Dutch language just defeated me. Mein Niederländisch ist nicht gut, obwohl ich etwas Deutsch sprechen.

Of course, I was working for Shell on the “European plan” which means that I got two months of vacation during the year! Mickey and I took several vacations. Aside from Christmas in Paris, the most memorable vacation was a riverboat cruise up the Rhine from Amsterdam to Basel, Switzerland. The city that I provided with this report is of me enjoying a Beer in the town of Koblenz at the confluence of the Mosel with the Rhine. During the trip we visited Köln, Heidelberg, Strasbourg, Alsace, the Black Forest, and other towns and regions.

All good things come to an end and last August I returned to Stillwater. As I officially stepped down as Head of the School on July 1, my duties now are just teaching, research and service. During Fall semester I taught a new advanced course in Carbonate Petrology and Geochemistry. Mike Grammer is taking over the introductory Carbonate course. In the Spring I am teaching the Historical Geology course. I am very busy with research now, particularly on work with the Mississippian Consortium. I am supervising two students, Sahar Mohammadi, a PhD student and Taylor Ewald a MS student, both on projects related to the Mississippian. I am hoping to add several other graduate students next year. I also have a very large backlog of research to publish. I just did not have time to do this during the past 12 years as an administrator so I am working on this now. It involves wrapping up work in Ireland and on the Isle of Man, publishing my results on work in the Porcupine Basin, and publishing, with former students, work here in Oklahoma. I am also working with a Chinese scholar on diagenesis of lacustrine petroleum reservoirs in China. Aside from

Dr. Todd Halihan

For Dr. Halihan, 2013 was a year of juggling various jobs to try to move OSU BPSoG forward a little further. Robert Reynolds defended his M.S. thesis evaluating free convection using geophysics in a fault system in New Mexico. Four undergrads have also joined my group as the BPSoG tries to get undergrads more experience for working or heading to a graduate program. This summer, I acted as department head when the rest of the faculty were conducting research around the world. It is amazing how many forms need to be signed and reports given when Stillwater is fairly quiet.

December 2013: Todd Halihan in Coal Creek Cave demonstrating that he is too big for some pore spaces. This was part of Kaitlyn Beard’s undergraduate research project that she is presenting at GSA South Central meeting in Fayetteville in March 2014.

At GSA, I spent my year organizing the Hydrogeology Division for the 125th anniversary meeting in Denver. We had a great Legends dinner with over 70 members attending and our luncheon was over 200. I continued my role as Emcee at the student reception along with my duties as a board member for the Hydrogeology Division. I continue to try to blend industry interests with academic pursuits for the group as it helps both realms improve their work.
My company, Aestus, LLC, continues to evaluate contaminated sites using OSU intellectual property developed in my lab. This has been another busy year and growth seems like it will continue. The company continues to add employees and may finally get a new website.

On the home front, the Halihan home continues to host parties for the department. I discovered the origin of the blind valley on the property this year with a 40 gpm intermittent spring flowing from the top of the Garber sandstone. Martha is teaching over at OSU Chemistry and enjoying about 300 undergrads per semester. My son, Maclain, is eight now and is interested in Lego sets. The Lego Corporation has a tremendous marketing capability unfortunately.

**Dr. Mary Hileman**

This is now my sixth year as Adjunct Assistant Professor in the Boone Pickens School of Geology. Last fall I became a full-time faculty, teaching a total of 5 courses during the academic year 2013-2014.

I teach GEOL 3413, Petroleum Geology for Engineers every semester. This is the initial core course for the Minor in Petroleum Engineering. It is an entry-level geology course for engineering students who have no prior training in Geology. Although the course starts with the basics of rocks and minerals, Earth structure and plate tectonics, the topics quickly move on to basic well log analysis, sedimentary depositional systems, sequence stratigraphy, drilling and completion techniques, horizontal drilling, geophysics, hydrocarbon geochemistry, basics of hydrocarbon reservoirs, well economics and risk analysis. The lab each week gives students hands-on experience with rocks, well log interpretation, structural and stratigraphic mapping. A field trip provides students the opportunity to observe channel sandstones and use a portable natural gamma-ray spectrometer to record values across an outcrop that later are graphed and compared with nearby well logs. There is a term project, where students work in teams to prepare a prospect package that includes: cross-sections, net pay isopach and structure maps, geologic interpretation, economic evaluation and a proposed drilling package. Each team makes a formal power point presentation and are evaluated for logic of their proposed deal. Based on demand, the class has grown from 22 to 26 students, with others asking to enroll.

In the Fall, I teach Geology of the National Parks (GEOL 3043). This is a very popular elective Geology course for Junior and Senior non-science majors. The enrollment increased from 45 students in the fall of 2012 to 75 students in 2013. The focus for this course is to understand basic geologic concepts using 22 U. S. National Parks as examples. The influence of plate tectonics on the development of North America is a central theme for this course. In addition to 3 exams, students are required to write a five to seven page term paper that is a Guidebook to the Geology of a National Park or National Monument of their choice that is not covered in lecture.

This spring I am teaching “Advanced Well Log Interpretation” once again. During the development of the Minor in Petroleum Engineering, Advanced Well Log Analysis (GEOL 4323) became a core course and is the final Geology course required for this Minor. This course is an expansion of the popular course for graduate students (GEOL 5353) that has been taught for many years. The combined GEOL 4323/5353 meets once a week, for a 2 ½ hour evening lecture, discussion and problem solving session.

During the first half of the semester students evaluate the standard suite of vertical open hole, wireline logs, and learn to integrate logs with petrophysical data (cores, seismic, well test data). During the second half of the course, the information concentrates on evaluation of lateral holes (LWD/MWD). Guest speakers from industry cover types of logging tools used in lateral holes, petrophysical evaluation of this data and information display. Another guest speaker from industry will present micro-imaging technology and give students an opportunity to do interpretation of these logs. Finally, lectures by School of Geology faculty (Drs. Grammar, Pashin, and Puckette) will each provide a 3 hour lecture on their current research on unconventional reservoirs. In addition to lectures and discussion, nine homework assignments provide opportunities for students to become capable of independent, fundamental, reliable analysis of standard open hole, wireline logs and to use principles of evaluation to solve subsurface geological problems. This class seems to have a good fit between undergraduate Engineering students who have completed GEOL 3413 and graduate Geology students who have some industry experience. Both groups have had exposure to well log interpretation, but need to move toward a more petrophysical centered approach. The homework problems provided for graduate students (GEOL 5353) are more challenging, and require additional analysis and critical thinking. This spring there are 35 Engineering students enrolled in GEOL 4323 and 16 Geology graduate students enrolled in GEOL 5353.

At the time GEOL 4323 was created for the Engineering Minor, it was opened as well to upper division Geology majors. I discovered last spring that none of the Geology majors had any prior experience with or exposure to well logs. Therefore, they needed a slower paced, basic well log course first. Therefore, this spring I am teaching a new course: “Introduction Well Log Analysis” (GEOL 4990.369). This class is similar to the Asquith and Krygowski’s AAPG “Basic Well Log Analysis” course. This new class, which meets twice a week for a total of 3 hours, has 12 homework assignments, time for discussion and in-class practice of techniques and 3 exams. There are 17 students currently enrolled in this course.

Currently, I serve on a Geology Masters Thesis Committee for Brett Miller. I also serve on an English Ph.D. Committee for Jenna Bazzell.

**Dr. Priyank Jaiswal**

2013 was an eye opener. In 2012, Halliburton gave me a grant to run a training program for high school teachers. Toni Ivey, Dept. of Education, helped me form a plan and get the word out. We hand-picked eight teachers from high schools in rural Oklahoma. Six department faculty joined hands and we prepared a week-long, comprehensive program such that the teachers are introduced to the latest trend in geology and geophysics. We recruited three TAs – Brandy Michaels, Valina Safa and Jordan Harding. The workshop started with a casual introduction and the teachers were asked to draw a “geologist.” I was amazed to know how we are perceived by the

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general community - from trench diggers to rock dwellers; everything I could imagine was there. The teachers had a great time attending the field trip led by Jack Pashin, doing hydrology led by Todd, and watching 3-D graphics in Mohammed’s lab. One afternoon Bret Danilowitz joined us for lunch. The teachers opened their hearts. It was concerning and a bit heart-breaking to learn that some of the middle schools in Oklahoma have not been able to update their textbooks in the last five years because of the lack of funds. I have a better appreciation of the crowd that I face three times a week in Geology 1014.

On the research side, I was able to win an OCAST grant. This is a state-sponsored program to fund projects that directly contribute to economics of Oklahoma. My collaborator in this grant is Ranji Vaidyanathan from the Dept. of Mechanical Engineering. The proposal will develop a lab for stress-shadow experiments, which could be an important consideration in fracking. The basic idea is rooted in the observation that a zone impacted by a large earthquake is not hit by another earthquake for a long period of time. Between “history repeats itself” and “lightening does not strike…” seismologists realized that when the fault is deformed it turns nearby zone into plastic. It is possible that fracking leaves behind a large volume of hydrocarbons within the shadow of the stimulated fractures. The facility is being built on the Tulsa campus and we hope to be able to run our first experiments by the end of this year. First results from Mississippian consortium were shown to the sponsors; it seems like we will be getting more data.

I have been teaching two courses on an annual basis - Introduction to Exploration Seismology and Geology and Human Affairs (geology for non-geologists). The former course typically has 12 students and the latter one has 200. This year I will also be co-advising the seismic interpretation with Eva Peza. The seismic group continues to grow. I have three Ph.D. and six Masters students. The group has become quite diverse. From rock physics to ground roll inversion, the students’ interests are becoming more and more diverse every year. This year I had a visiting student in the summer from India on an internship and another sponsored by the Chinese government to spend one year of his PhD with me working on gas hydrate.

Another notable achievement included Khemraj, my PhD student, and his teammate ended up third in the international challenge bowl conducted by SEG; a large collaborative experiment (with Stanford, Geokinetics, and iSeis) on rotational sensors. Look for an upcoming paper in Geophysics on 18-C seismic (6 kinds of motion recorded by tri-directional source).

I hope 2014 to be a prolific year. I am looking forward to it and so are my students. Do call upon me when you swing by Stillwater again. I would love to give you a tour of the computation seismology lab.

Dr. Daniel A. Laó Dávila

Last year was an exciting year at the Boone Pickens School of Geology. We have a new Head, new collaborations, and an expanding department. Our faculty and graduate students are performing at a higher level and the future looks bright with the addition of two new faculty members.

I enjoyed my teaching very much as I interacted with 220 students from the Geology and Human Affairs course and 34 students from the Structural Geology course. I was co-author of poster titled “Using a geoscience blog to provide research-based, contextual, and culturally-relevant geoscience information to a Spanish-speaking audience” at the Geological Society of America-Southeastern Section Meeting held March 20-21 in San Juan, Puerto Rico. I also presented a poster titled "Kinematic model of the Northern Puerto Rico Fault Zone: Transpression, Strain Partitioning and Lateral Extrusion" at the GSA Annual Meeting held in Denver, CO Oct. 27-30. In addition, a proposal to study incipient rifting in Malawi was submitted to the National Science Foundation, and a review paper on the Collisional Zones in Puerto Rico and the northern Caribbean has been submitted for publication.

Student research is very active. Erin Roherig successfully defended her thesis titled "Petrography, Mineralogy, and Serpentinitization of the Rio Guanajibo Serpentinite Body, Puerto Rico" and is now employed in Marathon Oil as an exploration geologist. Louis Steigerwald won a prestigious Wentz Project Scholarship, which will support his undergraduate research project of mapping active faults in central Oklahoma. He will present his research at the next Annual Meeting of the Geophysical Society of America-Southeastern Section to be held next year on March 18 in Fayetteville, AK.

The outlook for this year seems promising as the Tectonics and Geophysics Group continues to grow in participants and collaboration. Our studies will continue to focus on strain partitioning and localization in young continental rifts and in arc-continent collisional zones.

Dr. Jack Pashin
rock characterization in shale is underway. We recently received a large DOE grant to monitor CO₂-enhanced oil recovery operations in the Anadarko Basin using land-based and airborne sensors. The airborne sensors will be mounted on unmanned aerial vehicles, otherwise known as drones! I have just completed a major project on produced water and gas from coalbed methane reservoirs that provides new insight on the relationships between water chemistry and late-stage biogenic gas generation, as well as the potential for beneficial use of produced water. In addition, a large-scale CO₂ injection pilot I am participating in at Citronelle Field in Alabama is approaching completion, and we have begun using the results of this injection to develop field-wide models simulating commercial CO₂ storage in the Cretaceous-age Paluxy Formation.

Last semester I taught a course on Unconventional Petroleum Reservoirs, and this semester I am teaching Basin Evolution. I suddenly have many graduate students. They are all extremely bright and highly motivated; it is a pleasure mentoring them as they embark on their research projects, which include the sedimentology and reservoir characteristics of shale, tight-rock petrophysics, and geologic carbon storage. The past year has been a busy year for meetings and publications. I was honored as the keynote lecturer at the International Conference on Coal Science and Technology, which was held last fall at Penn State. Publication highlights include papers on the geochemistry of coalbed methane reservoirs, an exceptional Carboniferous amphibian trackway locality, and an unusual Mississippian sponge-microbial bioherm facies.

Feel free to stop by and say hello next time you are in Stillwater, and please don’t hesitate to call or e-mail if I can be of assistance.

Dr. Jim Puckette

I wish to express my appreciation to the alumni and friends of the Boone Pickens School of Geology whose support for our students, staff and faculty instills a sense of family that helps make our passion an enjoyable and rewarding profession. For me, 2013 was an opportunity to learn from our students and faculty about the cyclic nature of deposition during the Carboniferous that generated the Mississippian carbonates, the complexities of composition and fabric that make the Woodford Shale a reservoir in northern Oklahoma, and the geochemical proxies for paleoecology used to interpret bottom water and sediment geochemistry during deposition. In October, our students participated in the AAPG Midcontinent Section Meeting in Wichita and not only contributed to the science, but volunteered to make the core workshop a success. In 2013, Joe Dixon completed his thesis on the Woodford Shale in northern Oklahoma and demonstrated how the onlapping Woodford Sea flooded the continent and filled the accommodation generated by erosion associated with the pre-Woodford unconformity. Following graduation, Joe started full-time employment with Devon Energy in Oklahoma City. Mohamed Musa completed his dissertation on the Chattanooga and Woodford shales and demonstrated that paleo-redox indicators supported depositional evidence that these stratified seas were subject to high frequency disruptions of stratification that oxygenated bottom water and allowed biota to colonize the ocean floor. Following graduation, Mohamed returned to Libya and a career in academia.

The addition of Ms. Sheri Orr to the School as the undergraduate academic advisor has reduced my responsibilities and allowed me to dedicate more time to research. However, I miss interacting on a regular basis with the undergraduates.

Our research team, in collaboration with faculty and students who are part of the Mississippian Consortium and the RPSEA shale teams, continues its focus on the Woodford Shale and Mississippian carbonates. Other research topics we are addressing include characterizing the Cleveland Sandstone, Missourian Granite Wash, Marmaton Group, and Caney Shale in specific areas of the southern Midcontinent. Add to that the research on the magnetic susceptibility of petroliferous and non-petroliferous shale units and undergraduate research on dolomite in the Pearson Limestone, composition of the Woodford Shale and Arkansas Novaculite, and distribution of lead in soils around early Oklahoma homesteads, and the realization sets in that 2014 is shaping up to be one of the busiest ever.

Dr. Tracy Quan

Happy 2014 from the sediment geochemistry lab in the Boone Pickens School of Geology! It’s always amazing to look back at the past year and see what has been accomplished, both in my lab and in the School of Geology as a whole. Just last year we welcomed four new faculty; this next year we plan to welcome two more!

2013 was a very productive year for research in my lab. We continue to focus on characterizing depositional sedimentary systems through time with respect to water column redox state, nutrient cycling, and the biogeochemical environment. We are making progress in our use of nitrogen isotopes to investigate a wide range of paleo-redox changes and nitrogen dynamics. My National Science Foundation-sponsored analysis of the nitrogen cycle and redox changes through the Cretaceous-Paleogene (K-Pg) mass extinction is continuing to progress, aided by the assistance of a new graduate student, Brad Beckwith. My paper describing nitrogen dynamics through glacial-interglacial cycles in the Black Sea was published in Geochimica et Cosmochimica Acta this year. We have started to add biomarker temperature proxies to our toolbox in order to improve our ability to characterize past depositional environmental conditions. Collaborations with other researchers also yielded a Geological Society of America presentation, and another paper published in Nature Geoscience, one of the foremost geoscience journals in terms of audience size and impact factor.

Interesting results are being generated from our continued investigations into the use of nitrogen isotopes as depositional redox proxies in hydrocarbon reservoirs and unconventional shale units. Thus far, the data indicates that bulk sedimentary δ¹⁵N values appear to be reliable proxies for depositional water column redox conditions, as supported by a range of geochemical and lithological proxies. My former student, Ekenemolise Adigewe, and I, along with Jim
Puckette and collaborator Natascha Riedinger, published our first paper in Chemical Geology utilizing nitrogen isotopes as reliable proxies to characterize redox differences between the Woodford Shale and Caney Shale units. This research was taken a step further by my recently graduated Master’s student Keith Rivera, who determined that bulk nitrogen isotope values from hydrocarbon producing shales are primarily set by the deep-water oxygen concentration during initial deposition, and are relatively unaffected by the degree of thermal maturity, supporting the use of nitrogen isotopes as a proxy for depositional redox state. Keith defended his thesis in August, and we are working on a paper describing his results. My second new graduate student, Brice Otto, is hoping to take the nitrogen isotope proxy in unconventional systems one step further by investigating different nitrogen fractions within the shale samples, as these fractions may provide information about other depositional and post-depositional processes.

The growth in the number of Geology majors meant that I had over 45 students in Practical Mineralogy this Fall for the second year in a row. This makes the class a challenge to teach and organize, but I have tried to incorporate as many hands-on and interactive learning opportunities as possible, including a field trip and group presentation activity. The Physical Geology course in the Spring was made all the more exciting by the addition of Arts and Sciences Dean Bret Danilowicz to one of our Saturday field trips. By all accounts, he had a great deal of fun running around the Arbuckles with the students and learning about geology, even with the bus breakdown during the return to OSU. This year, I also revived the graduate-level Organic Geochemistry class, and had a good group of students interested in how organic geochemical principles could be used to characterize, evaluate, and even advance our knowledge in both petroleum-based and environmental systems.

In addition to teaching formal courses, I have also participated in several outreach opportunities, including National Lab Day, the Oklahoma EPSCoR Women in Science Conference, and the first annual Halliburton OSHA-GAP Geoscience Ambassador Program. This year, OSU was awarded a new chapter of the Phi Beta Kappa Honors Society, of which I am proud to be a charter member. I am on the planning committee for next year’s GSA South-Central Section Meeting to be held at OSU, so mark your calendars for March 2015.

The evidence strongly suggests that 2013 was a great success for the Boone Pickens School of Geology and associated faculty, post-docs, and graduate and undergraduate students. It is my hope that 2014 will be even more successful!

NEWS FROM STAFF

Ms. Sandy Earls

It is hard to believe that I have been with the department for 17 years. Time sure flies by when you are busy and having fun.

This past summer was a busy and difficult one for me. I traveled each week between Stillwater and Moline, KS to be with my Dad. He was in the hospital several times before being transferred to the nursing home. He passed away on August 16th and Pete and I are trying to help my Mom now that she is alone.

We took a vacation in November for our 30th anniversary and travelled to Tennessee where we spent our honeymoon in 1983. We took Mom to Chattanooga where she stayed with her sister for the two weeks we were gone. This coming summer will be the bi-annual family reunion and I once again hope that someone else will be elected as the Secretary/Treasurer of the Foust clan.

We are working on several things to improve our acreage. We planted two fruit trees and have three more to go. The most entertaining part of having goats is watching Pete trying to herd them back to our pasture.

I am still working on needlework and getting to sew. I have also taken on the task of scanning pictures in my parents collection so that we have backup copies. Once I finish scanning their pictures, I will start on ours.

In the spring of 2013 one of the student workers, Erika Brown, nominated me to receive the Outstanding Staff Award in the College of Arts & Sciences Student Council. I received the award at their spring banquet. The faculty in the Boone Pickens School of Geology have nominated me for the Distinguished Service Award this fall. This award is given by the University Staff Advisory Council. I am currently a finalist for this award, which will be announced at the end of February.

I look forward to another year of working with the alumni, students, staff, faculty and friends of the Boone Pickens School of Geology. Every day there is a new challenge that keeps the staff on our toes. The current staff also includes Tabitha Schneider, our student workers, Macaley Guilfoyle (who has been with us one year) and Margaret Flowers (who is our newest hire this semester). We work very well together and actually have a good time doing it. We hope you will stop in the office and see us when you are in town.

Ms. Tabitha Schneider

As of this past September, I have been with the Boone Pickens School of Geology for a year. It has been a wonderful and hectic year learning from Sandy all the different jobs...
big and small, which help to make the office run smoother.

I am now handling many more of the day to day duties; among those are answering questions from our current student population and prospective students, updating the textbook orders with the bookstore and monitoring enrollment numbers for each course at the beginning of the semester, all the while keeping up with the student records, and graduate applications for the next semester.

I love interacting with the students and faculty at the School of Geology. We have a group of very bright and friendly graduate & undergraduate students who are great to work with. During this year, Macaley Guilfoyle & Margaret Flowers, are delightful and entertaining, which makes each day pass quickly and the completion of shared tasks much fun.

My plans for graduate school changed last year due to a lack of funding. As a result, I decided to wait a year or two to be certain of the direction I want to go with my Master’s degree. It’s not completely out of the picture, but I believe it is better to evaluate the direction my career is taking before I make a final decision regarding the degree program I enroll in.

My family is much the same as last year. Allison will be six at the end of February and Elijah just turned eight this past December. They are both in school making good grades, Allison in Kindergarten and Elijah in second grade. My husband John is working for Koby Oilfield Services and I think he has finally found a company that fits well with his personality.

One big change in our lives this year is that my daughter Allison, who has been a Type 1 Diabetic for a little over two years now, is going to be fitted with an insulin pump. This will require some retraining for all of us responsible for taking care of her, but the improvement in her health will be well worth the extra trouble. We are all looking forward to starting the process and we appreciate her endocrinologist who is making this possible. She was an advocate for Allison throughout this process and managed to work out every small detail for us.

It has been and continues to be a pleasure to work with the faculty and other staff members of the Boone Pickens School of Geology. I look forward to the next year spent in their company and seeing the results of the many changes that are happening in our department.

Mr. Tim Sickbert

New faculty and increasing enrollment are giving me plenty of opportunities to add value to the department. In addition to setting up computers, installing software, assisting with assorted hardware, general maintenance and troubleshooting, I quartermaster some of the School of Geology’s field instruments and train students on their use. Beyond that, I keep busy installing and maintaining software and licenses, and assist with some equipment sourcing and purchasing. In my spare time, I continue to pursue my doctorate in geology by trying to deconstruct the kinematics of the Arbuckle Mountains.

Meanwhile, enrollment has grown so large that the School of Geology’s own classrooms can no longer accommodate all the students in core classes such as Mineralogy, Petrology, Structure, and Sedimentology and Stratigraphy. To help us seat all the students, the College of Arts and Sciences funded the School of Geology’s proposal to add new technology to a 99-seat classroom—NRC108—in the Noble Research Center. In that lecture hall, we will be adding a new 3D GeoWall, a new wall-mounted SmartBoard touchscreen, and a petrographic microscope with attached video camera. The cost of the equipment is high enough that we had to put it out for bid, significantly slowing down the project. Nevertheless, we are now making steady progress on acquiring the equipment, and the Institution for Teaching and Learning Excellence (ITLE) at OSU is scheduled to install it this summer.

Additionally, local seismicity is providing opportunities for research. Dr. Mohamed Abdelsalam is purchasing six research seismometers for his investigations into the structure and tectonics of the East Africa Rift System. Because the Africa campaign will be neither immediate nor permanent, I am looking for local sites at which to deploy the seismometers to provide data sets for both education and research. Mohamed has also purchased SARScape software to process satellite radar data to create InSAR interferograms that I will use to search for surface deformation related to the Oklahoma earthquakes.

Ms. Sheri Orr

Hello and nice to meet you!

My name is Sheri M. Orr and I am the new Academic Counselor for the Boone Pickens School of Geology. I have a B.A. in Sociology (University of Oklahoma, 2006) and a Master’s in Higher Educational Administration (University of Nebraska-Lincoln, 2008). I spent five as a Residence Hall Director at the University of Central Oklahoma, but moved to small-town Perkins, America to marry my husband, Matthew, in May 2013. Together, we have four fur-babies, so we get out of the house as often as weather permits to ride around on his Harley.

In August, I was hired to serve as the primary academic advisor to our approximate 135 undergraduate Geology majors. With a steady influx of students majoring in Geology, the department wanted to make sure Dr. Puckette had time to actually teach, so they hired me to help lighten his load (a little – although he’s still really busy!). Luckily for me, he has been a great mentor (to the students and to me) and his office is next door if I have questions! In addition to Geology, I also advise Chemistry and Physics majors, so I’m responsible for the academic planning and well-being of ~250 students. It has been really exciting to work with the different faculty and staff throughout the departments, but I have to admit, I am so happy to call Geology “home.”

I’ve been busy these past five months getting to know our students, as well as getting to know our field. I have worked hard to build relationships with our faculty and learn about their specialties and the classes they are teaching. It is my goal to be able to offer the best academic, and personal, advice to students regarding their enrollment, course sequencing, graduation expectations, and career/graduate school planning and goals.
I have had the opportunity to implement a few changes that will hopefully help increase student success and improve overall graduation/retention rates. With Dr. Estella Atekwana and Dr. Puckette's input, I recently created a Four-Year Planning Guide to give to students during their first semester at a Geology major and to prospective students. On the guide is an outline of recommended course sequencing, required prerequisites for Geology courses, as well as suggested courses for select sub-disciplines. I hope to begin utilizing the guide this spring. In October, per my recommendation, the faculty voted to offer two of our “bottleneck” courses twice a year (fall & spring) to help provide a more efficient path to graduation. Starting next fall, we will offer Historical Geology and Mineralogy (both prerequisites for other, upper-division Geology courses) two times a year. Our goal is to allow transfer students to take more Geology in their first few semesters, as well as to ensure students aren't too far behind in their course sequencing. We implemented another major change to the department this fall that we hope will increase our students' retention rates and GPAs. We partnered with the Registrar's Office to electronically enforce listed prerequisites for Geology courses; this meant students were prohibited from enrolling in courses for which they were not sufficiently prepared. By monitoring enrollment and requiring successful completion of prerequisites (usually a grade of C or better), students should be better prepared for and earn better grades in their classes. By next year's newsletter, I hope to be able to brag about our rising caliber of students, increasing number of graduates, and how little I bothered Dr. Puckette with advising/Geology questions, but until then...Go Pokes!!

**SPOTLIGHT ON FACULTY RESEARCH**

**BPSoG PUBLICATIONS 2013 (OSU affiliation are bolded, *denotes OSU students authors)**


**NEW GRANTS 2013**


6. PI/PD Jaiswal. Oklahoma State - Sponsor: Halliburton Geoscience Ambassador Program, Halliburton Inc. $20,000


12. PI/PD Abdelsalam. Integrated Studies of Early Stages of Continental Extension: From Incipient (Okavango) to Young (Malawi) Rifts. Sponsor: NSF. Amount: $18,943


**SPOTLIGHT ON STUDENTS**

**PHD STUDENT HIGHLIGHT**

**BETH VANDEN BERG By Dr. M. Grammer**

**Dissertation Topic:** Carbonate Sequence Stratigraphy and Petrophysics

Beth Vanden Berg examining core samples

Beth is beginning her second year in the Ph.D. program here at OSU, having transferred last January from Western Michigan University. Her Ph.D. research is directed towards a better understanding of the genesis and evolution of carbonate pore systems and how they influence reservoir permeability by combining carbonate sequence stratigraphy with the development of micro- to nano-scale pore systems in unconventional carbonate reservoirs.

Beth was awarded both a BS degree in Geology and a BA in History and Archeology from Calvin College in Grand Rapids, Michigan, and a M.Sc. from Clemson University. Beth’s Masters research was focused on providing a comprehensive overview of the geologic, environmental and anthropogenic impacts of a key watershed valley in the West Bank, Palestine/Israel, during which time she did research at Lebanon American University (LAU) and the American University of Beirut (AUB), in addition to that done at Clemson. After graduating from Clemson, Beth worked for 7 years as an environmental consultant, project manager and hydrogeologist on multiple projects throughout the southeast, east and mid-west of the United States. During this time, Beth earned multiple awards for project performance and teamwork from the firms of both Haley and Aldrich, Inc. and Brown and Caldwell.

Before and during her M.Sc. work at Clemson, Beth spent quite a bit of time visiting and working in Jordan, Israel, Palestine, Lebanon, Egypt and Syria, and lived for a time in Umm el Jimal village and Amman, Jordan; Jerusalem, Israel; a village near Ramallah, Palestine; and in Beirut, Lebanon. This experience has provided Beth with a unique background in cultural and professional diversity that explains why she is such as asset to many of the international graduate students here in the Boone Pickens School of Geology.

Beth has already received significant recognition for her Ph.D. work as indicated by her recent selection as one of 3 Ph.D. students nominated from the worldwide carbonate community who are chosen to organize and moderate the SEPM/AAPG Carbonate Research Group Meetings at the Annual AAPG/ACE meetings. Beth published her M.Sc. research in a Special Publication on the Lower Jordan River Basin and has presented 9 papers to date at professional conferences (AAPG and GSA), including 4 so far from the first year and a half of her dissertation research. Beth is a member of AAPG, SEPM, AIPG and the Tulsa Geological Society, and is a licensed Professional Geologist in the State of Georgia.

Beth’s career goal is to be a “petroleum geologist and key team member with a mid-large size oil and gas company. When she is not working on her Ph.D. research (which is increasingly rare!!!), Beth can be found pursuing some of her other interests in cooking, gardening and landscaping, or teaching Zumba.
MS STUDENT HIGHLIGHT
SCOTT MEIER By Dr. Eliot Atekwana

Scott Meier on Lake Ngami, Botswana during a sampling expedition in 2012.

Scott Meier is a second year master’s student working under the advising of Dr. Eliot Atekwana. He completed his undergraduate degree in Geology at Arkansas Tech University in Russellville, AR. He is passionate about the outdoors and enjoys fishing and mountain biking. His academic and career passions include the hydrogeology and the research of water resources in geologic systems.

In Scott’s immediate goals he aims to work as a professional geologist regarding both issues of water quality and the petroleum industry. His future goals are to pursue a Ph.D. in geology and to do work benefiting human impact studies as well as international water development projects.

Scott’s current research involves the analysis of the chemical and physical properties of the newly formed Lake Ngami in northwest Botswana. The purpose of this study is to identify and model major processes that affect the chemistry during the filling of a closed basin lake in a semiarid environment. Scott has recently submitted his thesis for publication to the Journal of Hydrology. Scott has published 4 abstracts and made presentations of his work at both the 2012 and 2013 GSA national conventions in Charlotte, NC and Denver, CO. Scott has also given poster presentations of his work at the 2013 AAPG student expo in Houston, TX and the 2013 AGU Fall Meeting in San Francisco, CA. Scott is a member of AAPG, AGU, GSA, AIPG, and the Oklahoma State University Geological Society (OSUGS). When not working on his thesis, Scott enjoys running, fishing and canoeing.

UNDERGRADUATE STUDENT HIGHLIGHT
LANDON LOCKHART By Dr. Estella Atekwana

Landon Lockhart (see picture of Landon at the back of the newsletter) is currently an Honor’s student (Junior) in BPSoG with a Geophysics emphasis. He comes from Dallas, TX and is a Texan in every stretch of the imagination. When asked why he chose to major in Geology, Landon indicates that before applying to OSU, he had never previously taken a single course in geology. Furthermore, he had no idea what the job of a geophysicist might entail. However, he has always had an inclination toward the sciences and mathematics, which made him to seriously consider engineering. However, Landon’s brother who is also a geologist had a big influence in his life and played a big role in Landon choosing geology as a major. Like with many other geologists he got hooked after taking Physical Geology with Dr. Tracy Quan. He states “As I furiously began researching other fields, geology certainly began to appeal to me. Once I found myself in my first geology course during freshman year, I was absolutely convinced that I had made the right decision”.

Landon intends to earn a Bachelor’s, Master’s, and possibly a Ph.D. in geophysics and eventually use his skills as a geophysicist in the oil and gas industry. He hopes to join a growing number of people addressing the global energy challenges of the future by delivering fuel to those who want and need it in the most environmentally friendly manner.

When asked what his most memorable experience is in the BPSoG, he responds, “My most memorable experience occurred last summer when I accompanied Professor Estella Atekwana and a few graduate students to Sub-Saharan Africa for a research project. I spent my entire summer as somewhat of a nomad, rarely spending more than two consecutive nights in a single hotel as our group traveled between numerous countries investigating the features of rift initiation. This incredible international experience introduced me to scientific research and exposed me to entirely new cultures, food, and people as we travelled across Malawi, Zambia and Botswana. More importantly, it broadened my understanding of my area of study and introduced entirely new fields of geophysics”.

Landon indicates that he is thankful to the many dedicated faculty in the BPSoG and for the way they have impacted his life. He hopes to be able to give back to OSU and to society in a similar manner. When not studying, which is rarely, Landon enjoys reading, tennis, running, hanging out with friends and family, spending time outdoors, and church. Landon is a member of AAPG, SEG, Stillwater K-Life (a youth ministry focused on teaching, shaping, and disciplining today’s teenagers). Landon’s many honors include: Arts and Sciences’ Student Spotlight, General Honors Award (fall of 2013), President’s Honor Roll (spring of 2013), Dean’s Honor Roll (fall of: 2011, 2012, 2013; spring of: 2012), Devon Energy Corporation Scholarship (2013, 2014 OSU), Skinner Scholarship (2013, OSU), Phi Eta Sigma Honors Society (2012), and Eagle Scout (2010). Please see picture of Landon at the back of the newsletter training Staff at the geological Survey of Malawi on how to use a GPS.

STUDENT CLUBS
American Association of Petroleum Geologists (AAPG)

AAPG members helping local cub scouts earn their geology activity badges

The American Association of Petroleum Geologists Oklahoma State University Student Chapter is an organization that provides students with opportunities for leadership, education, outreach, and networking. This year, AAPG hosted a series of fundraising events, including the annual golf tournament, in order to fund students attending the AAPG Annual Convention and Exhibition. In addition to organizing Petra and Petrel training courses, a spring break trip across the western US, a graduate/undergraduate mentorship program, numerous guest lectures from industry professionals, and the first annual 5K Rock Run, AAPG also helped local cub scouts earn their geology activity badges.

Oklahoma State University Geological Society (OSUGS)

OSUGS executive committee with Triple Junction Function guest speaker, Dr. Gary Rice.
The geological society at Oklahoma State University is dedicated to providing undergraduate and graduate students with opportunities to further education, networking, and fellowship. Each year, OSUGS hosts Triple Junction Function, an event at which Oklahoma State University geology students and members of the Oklahoma City and Tulsa Geological Societies gather to network and attend a guest lecture. This year, guest speaker Dr. Gary Rice, president of GeoFrontiers Corporation, presented a talk on geochemical exploration and the vertical migration model. There were over 80 people in attendance. In addition to Triple Junction Function, OSUGS hosts movie nights and guest lecturers.

**Society of Exploration Geophysicists (SEG)**

The SEG Student Chapter at Oklahoma State University is devoted to promoting education in applied geophysics. Each year, SEG participates in SEG Field Camp and the SEG Challenge bowl, and leads several field excursions to provide students with hands-on experiences in data acquisition. Last year (2013) at the SEG Challenge Bowl, the Oklahoma State University Student Chapter won 2nd place regionally and 3rd place nationally. Students also attended the SEG Annual Convention in Houston, TX, where many of them gave presentations about their research. This year, the Oklahoma State University Student Chapter will be hosting the first ever SEG Geophysical Tech-Fest, a convention at which students and faculty from Oklahoma State University, University of Oklahoma, University of Tulsa, and University of Arkansas will deliver oral presentations and participate in a poster competition. This event will take place on February 21 from 8:30AM to 3:30PM.

**Association for Women Geoscientists (AWG)**

The Association for Women Geoscientists at Oklahoma State University aims to encourage the participation of women in the geosciences. AWG members perform outreach, educational and networking events hosted by the Oklahoma City Association for Women Geoscientists and organize numerous club fundraisers. They typically have a bake sale in the spring and in the fall which is a real hit for passersby in NRC.

**Geology Graduate Student Association (GGSA)**

The Geology Graduate Student Association is designed to develop relationships between graduate students at the professional and personal levels. Each year, GGSA hosts a number of social and networking events, including tailgates for every Oklahoma State University home football game.

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**CONGRATULATIONS TO OUR 2013 GRADUATES**

**DOCTORAL GRADUATES**

**Farag Mewafy.** Advisor: Dr. Estella Atekwana  
Dissertation Title: *The Role of Biominerals in Enhancing the Geophysical Response at Hydrocarbon Contaminated Sites*

**MASTERS GRADUATES**

**Fathiya Al Hadhrami.** Advisor: Dr. Priyank Jaiswal  
Thesis Title: *Rock Physics Models for Constraining the Quantitative Interpretation of Ultrasonic Data for Biofilm Growth and Development*

**Joseph Dixon.** Advisor: Dr. Jim Puckette  
Thesis Title: *Facies Analysis of the Woodford Shale in North-central Oklahoma*

**Morgan Ostroski.** Advisor: Dr. Eliot Atekwana  
Thesis Title: *Investigating the Formation and Evolution of Mega-paleolakes in the Middle Kalahari of Semi-arid Botswana from Sedimentary and Geochemical proxies*

**Keith Rivera.** Advisor: Dr. Tracy Quan  
Thesis Title: *Geologic Controls on Nitrogen Isotopes in Marine Black Shale: a Case Study of the Woodford Shale, Anadarko Basin, Oklahoma*

**Erin Roehrig.** Advisor: Dr. Daniel Lao Davila  
Thesis Title: *Petrography, Mineralogy, and Serpentinitization of the Rio Guanajibo Serpentinite Body, Puerto Rico*

**Cameron Ross.** Advisor: Dr. Estella Atekwana  
Thesis Title: *Geophysical and Geochemical Characterization and Delineation of a Crude Oil Spill in a Highly Saline Environment*
The success of our profession pivots on a University retaining enthusiastic professors who produce world-renowned alumnus. The Boone Pickens School of Geology Advisory Board thanks all of you who continue to make us proud of OSU.

- Together we have accomplished much this year!
- >$1.6M raised for the “Geosciences Chair” honoring Dr. Jim Puckette!
- Miss Lime consortium has 11 companies and incredibly successful in its 2nd year!
- >$1.5M donated in cash gifts
- 10 students got an in-depth view of industry during “Bring a Cowboy to Work Day”
- Sponsored many students for SEG, GSA, AGU and AAPG conventions
- Advisory Board semester long professional course taught for a second time!
- Many cities hosted OSU Geology events, from Midland to OKC, to Houston, to Tulsa… many more to come in the near future
- Sponsored Golf Tournament for AAPG student chapter
- Terry Hollrah’s BBQ!
- Scholarships, scholarships, scholarships!!!!

Always looking for active members who take pride in our school!!
UPCOMING OSU GEOLOGY EVENTS

Annual OSU Geology Advisory Board Meeting
Saturday, March 29, 2014 at 12:00 Noon 001 Noble Research Center on the OSU Campus. A lunch will be served

Annual Alumni Banquet
The Faculty, Staff and Students of The Oklahoma State University Boone Pickens School of Geology cordially invite you to attend the Reception and Alumni Banquet on Saturday, March 29th, 2014. The Reception and Banquet will be held on campus at the Conoco-Phillips Alumni Center.

The reception will begin at 6:00 pm and includes a cash bar. The Banquet will be from 7:00-9:00 pm in the Click Alumni Hall.

To make your reservations to attend the banquet, Call Sandy Earls at the School of Geology, 405-744-6358. There is no cost to attend the banquet (with the exception of the cash bar!!!)

Support the Boone Pickens School of Geology with a gift of Stock.
You can support the Boone Pickens School of Geology by making a gift of securities. Publicly traded securities, shares of stock in closely held companies, bonds and government issues may be given to the OSU Foundation for the benefit of the School. For more information on making a gift of stock, please contact Lauren Kidd at lkidd@osugiving.com or by phone at 405-334-7599.

A Final Message and Request
Please consider helping OSU Geology – your contributions go a long way toward furthering our goals of teaching, applied research, and providing the next generation of America’s geological workforce. Below you will find a listing of various funds and a brief description of what these funds are used for.

- Alumni Advisory Board Graduate Fellowship (22-87150) – This fund is for those wishing to pledge at the level of $1,000 for the next five years for a total of $5,000. To help support graduate students.
- Alumni Geology Graduate Fellowship (22-99300) – To help support graduate students.
- Faculty Recruitment & Retention Fund (22-84850) – To help hire and retain highly qualified faculty.
- Geology Unrestricted (22-39600) – Used for funding the alumni banquet, newsletters, bringing in excellent graduate students and to help the School of Geology function on a day to day basis.
- Jim Higgins Memorial Fund (22-99920) – Memorial fund set up in Jim Higgins name to help support students during their study at OSU.
- Erik Mason Graduate Fellowship (22-84950) – To aid graduate students during their study.
- Dr. Wayne Pettyjohn Hydrogeologist Graduate Fellowship (22-86850) – To help support graduate students.
- School of Geology Student Enrichment (22-90050) – To help support student travel to present at conferences.
- John W. Shelton Graduate Fellowship (22-86850) – To aid graduate students during their study.
- Gary F. Stewart Scholarship Fund (22-28700) – To help support sophomore, juniors and seniors working toward a Bachelor’s or Master’s degree in Geology with a petroleum focus.

(Please make checks payable to OSU Foundation).

☐ Please bill my gift of $____________________ to my credit card.

_________________________________  __________________________
Credit Card number                          Exp. Date

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Name on Card                          Signature

☐ I pledge a total of $__________ to be paid

Beginning:_________________ Ending:_________________

☐ Monthly ☐ Quarterly
☐ Semi Annually ☐ Annually

Signature:_______________________________

☐ I want my bank account charged automatically. Please send me the necessary bank draft forms
Landon Lockhart (B.S. student) center training staff (Patrick Rafiki, left and Hendrix Kaonga, right) from the Geological Survey of Malawi on how to operate a differential GPS system as part of our capacity building effort in Africa.

Oklahoma State University
Boone Pickens School of Geology
105 Noble Research Center
Stillwater, OK 74078
USA

Address Service Requested