



The School of Geosciences Newsletter

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Greetings from the Director



Greetings and welcome to the 2016 School of Geosciences Newsletter! The last year has been busy, productive, and challenging. Our enrollments in the MS-degree program in Geology reached another milestone with 91 students. Enrollments in our undergraduate program in Geology dipped a bit to about 85, while enrollments in the Environmental Science program held steady at 75 students. One of the most exciting things to happen in 2016 was that we received approval from the state to start a new MS-degree program in Environmental Resource Science.

This program will begin in fall 2017 and will focus on water and soil resources. In another bit of good news, we acquired an amazing collection of minerals, rocks, and fossils that can help to supplement our labs for years to come. This collection from Louisiana Tech University became available when they discontinued their Geology program and courses. A generous gift of \$50,000 from the Lafayette Geological Society was used to establish an endowed fund for the long-term support of our field camp. The fund was named in memory of one of our graduate students, Michael O'Brien. We are also very excited about

the establishment of an endowed fund to support "Geology Student Technology and Research". This fund was established by Mr. James Gamble and supported by many others (see the donors section later in the newsletter). In another exciting development, Dr. James Martin and Dr. Jennifer Hargrave led an expedition with students to unearth more giant camel fossils in Oregon. The field work was an amazing success and will lead to new research and displays at our Geology Museum in 2017 and beyond. A successful equipment grant allowed us to add a new benchtop X-ray Diffractometer to our collection of research instrumentation in 2016.

Challenges in 2016 included the formal retirement of Dr. Brian Lock. Brian is still teaching a few courses for us as an emeritus professor, but these are some big shoes to fill. The downturn in the petroleum industry still persists, but the good news is that our students remain very competitive in this difficult environment. We have had at least half a dozen students find permanent employment in the petroleum industry in 2016 with many more securing internships. To maintain a competitive advantage it is more important than ever to provide our students with learning and networking opportunities. In this spirit we started a formal seminar series in 2016 and hosted speakers from Shell, Schlumberger, Halliburton, and elsewhere. We also hosted several petroleum geology and resume writing workshops and supported student travel to key meetings. We are optimistic that 2017 will bring even more opportunities for our students. Fundamental to our success is support from our alumni and friends. Our students really benefit through interactions with our alumni, so please stay in contact with us and help us support this networking.

Sincerely,

David Borrok

Faculty and Instructor Updates

David Borrok

I had a pretty productive 2016. I published four journal articles and secured \$220,000 in research grants. I taught graduate courses in Petroleum Geochemistry and the Geochemistry of Water Rock Interaction. The latter was a newly-developed course. I have a number of graduate students working on projects that examine the organic and inorganic geochemistry of hydrocarbon source rocks, including the Eagle Ford and Marcellus Shale. Hunter Lipmann, who graduated in Fall 2016, completed his thesis on "Application of Inorganic Proxies to Determine the Paleodepositional Controls on Organic Matter Accumulation for the Marcellus Shale in Northeastern Pennsylvania". Hunter is now working for Southwestern Energy in Houston. I also continue to work on research related to water resources in Louisiana and the Southeastern United States and have several graduate students working in this area. Researchers in Engineering and I recently published an assessment of the stress on water resources in Louisiana. This study has garnered quite a bit of attention in the state. I recently

presented this work to the state Water Resources Commission.

This summer I spent some time with my family traveling in Southern Missouri where we visited Elephant Rocks State Park (below) and other areas with interesting rocks related to the Precambrian uplift in the region. It is also a nice area of the world if you want to see a lot of caves and canoe down spring-fed streams.



Katie Costigan



2016 saw great expansion in my lab, which now has four graduate students (Cari Creed, Taylor Dorn, C. Marie Ledet, and Leslie Valentine) in it! I am excited about their projects and look forward to seeing what they all come up with. Most of my work continues to be focused on intermittent rivers- yes there are some in Louisiana- but have

been working on local fluvial/hydrology projects. I really enjoy fieldwork but this summer was challenging. One of the times Leslie and I went to the Basin we got >300 mosquito bites.

I have taught Intro to Environmental Science (ENVS 100) each semester I have been here. Enrollments

are being maxed out and I think that students actually enjoy the class. Even if I make them do eight hours of environmentally related community service. One student told me my class made him decide to stop littering. I will consider that a success. Environmental Field Techniques (ENVS 310) was a great class and I enjoyed teaching about instruments. My Watershed Science class (ENVS 484G) took two field trips- to the Old River Control Structure and Clark Creek MS that the students really enjoyed.

The August floods were truly awesome for me to see. We rode our bikes around on Saturday to document the water levels, which I would not advise the general public to do. This was in the name of science. I gave a Science on the Bayou and Physics departmental seminar about the meaning of a "historic flood". Joël Pautz, a luthier, and I married in December in what his 97 year old grandmother called a "strange but beautiful" ceremony at Lake Martin.

Jennifer Hargrave



My first year at UL went by very quickly and was full of both teaching and learning. I taught five different courses to a variety of student groups, including majors and non-majors, freshmen, and education

majors. The dynamic of each class is different, keeping me on my toes. I am an advisor for the college and quickly learned the requirements of the program. Additionally, as part of the Graduate Faculty, I have the opportunity to work with students on their research projects. I am currently working directly with three students and serving on another's committee on a variety of projects including a description and species identification of the *Megatylopus* jaw, the geology of the camel locality, and a depositional environment analysis.

Although most of my time is devoted to teaching for the university, a portion of my responsibilities is with the museum. I helped plan, design, and build the new "Giant Mammals" exhibit at the museum. This was a new experience for me and I learned so much about the process. I look forward to creating new exhibits in the future. This summer, I co-supervised five students on a six-week fossil expedition with Dr. Martin. We were able to include students (and even pay them!) as result of a Bureau of Land Management grant we received. The field season was very successful; we returned home with another giant camel skeleton and hundreds of bones from the skeleton collected last summer. The ULGM now has the most complete *Megatylopus* skeletons ever found.

In the coming year, I am looking forward to improving as a teacher by incorporating new teaching strategies into my larger classes, updating the museum exhibits, including the rocks and minerals, mentoring students as they complete their research projects, as well as developing some personal research goals. I will also serve as the president for the Lafayette Geological Society.

Brian Lock

I officially retired in May after nearly 40 years on the faculty at USL/ULL. I was appointed in early 1977 and finally arrived on campus in October, after problems with immigration. I was told that it would have been simpler to have waded across the Rio Grande, and it took another year to get my green card! A lot of paperwork was involved, complicated by the logical (but ill-advised) refusal by my sponsor, Monte Gimbrede to state for IMS purposes what my hourly rate of pay would be. Monte never understood the power of the Federal Government to insist on meaningless data. I had to take over as my own sponsor, write my own job description and invent number of weekly hours etc. for the forms.

Before coming here, I had obtained my degrees at Cambridge, with a Ph.D. on stratigraphic and plate tectonic issues in Newfoundland. I worked under John Dewey (Cambridge) and Stuart McKerrow (Oxford) and briefly in the field with Marshall Kay (Columbia). After graduating in 1969, I worked on the Cambridge Spitsbergen project, including fieldwork in the Arctic

islands, before taking up a faculty position in South Africa at Rhodes University.

I was appointed here by Paul Kessinger, and joined Monte Gimbrede and Bill Paine on the faculty, together with two other new appointees – Paul Roper and Gary Kinsland. Gary, of course, is still a fixture in the department.

In my years here I have supervised many M.S. projects, with over a hundred completed theses, and worked with many other students who never did finish (mostly because of lucrative job offers from the petroleum industry – Note, if you are a graduate student, NEVER make the mistake of saying you will finish after you start a full-time job. Doesn't happen, in 99% of cases).

I am now Professor Emeritus and am still teaching one course a semester and have a limited role with some of our thesis students and peripherally with the IBA team, now under Raphael Gottardi. This limited schedule suits my naturally lazy lifestyle.

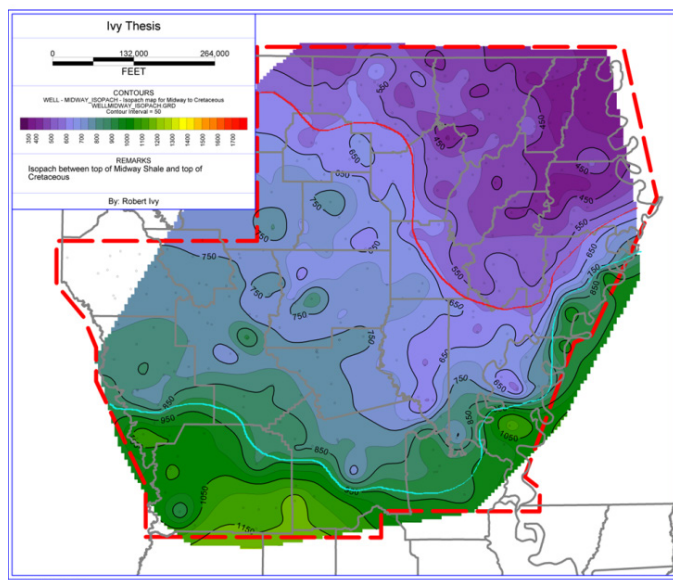
Gary Kinsland

This past year I have been deeply involved in two different research projects: 1) structure of the northern boundary of the Gulf of Mexico Basin and 2) investigation of a conventional core from LaSalle Ph. which extends from over 10 feet up in the Midway Shale, across the K/Pg and about 120 feet into the upper chalk of the Cretaceous.

In the first project Dr. Gottardi and I are collaborating and are members of two different working groups...one organized at the 2016 South Central GSA meeting and another organized at a recent NSF/EarthScope workshop in Waco, TX. In addition to bringing our experience and expertise to bear on the problem of understanding this boundary, especially the relationship of the northern Louisiana/East Texas structures (Sabine Uplift, Angelina-Caldwell Flexure, LaSalle Arch and Monroe Uplift) we have three students actively mapping to understand better the timings of the

various deformational events. The map shown below on the left, by Robert Ivy who is completing his thesis, illustrates (via an isochore map from the top of the Midway Shale to the K/Pg boundary) that at the K/Pg time only the Monroe Uplift of the four structures listed above displayed significant topography.

I was granted access to the conventional core by Justiss Petroleum of Jena, LA. The core is presently laid out in Austin, TX. A student, Kody Shellhouse, and I traveled there to visually describe the core. We are collaborating with a group at UT lead by Dr. John Snedden to interpret this core and to incorporate the information into their ongoing Gulf wide studies. Kody will be describing thin sections and another student, Eric Muchri, will perform optical microscopy and electron microscopy (EM) on samples corresponding to the thin sections. The picture below on the right is an EM image showing of coccoliths within the chalk below the K/Pg.



Raphaël Gottardi

In the spring of 2016 I conducted some fieldwork with two graduate students, Kohl Koppens and Eric Wang, in southern Arizona (A), for my ongoing research on metamorphic core complexes. Fighting against teddy bear chollas (a fight that Eric lost, B), the three of us collected samples from two different shear zones. The samples will help us resolve timing and magnitude of exhumation of these shear zones.

I had the pleasure to see Daniel Conlin graduate in the spring. In collaboration with Dr. Morra, Daniel developed and benchmarked a numerical model for fluid flow in fault systems, which has significant application to geothermal systems. We wish all the best to Daniel in his new job at Shell! This project is currently ongoing. Dr. Morra and graduate student Jason Cooper and Sam Yun are adding heat flow to the model, and coupled heat and flow fluid.

Max Schaper also finished his thesis over the summer. Using stable isotope geochemistry (thanks to Dr. Barnes at UT Austin), Max constrained temperature and sources of fluid rock interaction during exhumation of the Picacho Peak metamorphic core complex (AZ). I wish Max all the best at his new job at Civil & Environmental Consultants Inc (Pittsburg).

In the Fall, Shanna Mason defended her thesis of the structural characterization of the natural fracture system of the Eagle Ford Formation. Shanna and I took several trip to Eagle Ford outcrops along U.S. 90, west of Del Rio to look at fracture systems (C). After collecting hundreds of data, Shanna did an amazing job sorting through it and conducting a thorough mechanical analysis of the fracture system. Her results show that there are two well developed natural fracture systems, as well as hybrid-shear fractures. In addition, her results show that some mechanical units have not reached complete saturation yet. These findings are significant for understanding fracture system in the Maverick basin, and will soon be published in AAPG Bulletin. I am pursuing this work with two graduate students, Marshall Furrh and Madison Miller. Marshall will investigate the relationship between the Upper Eagle Ford and overlying Austin Chalk fracture networks, and Madison will focus on the hybrid shear fractures and vein fill, to characterize potential migration pathways.

Through organizing technical session and workshop at the south-central GSA meeting, Dr. Kinsland and I are pursuing our effort to better understand the northern boundary of the Gulf of Mexico (see Dr. Kinsland's update). I am particularly interested in understanding the crustal structure of the continent, and the nature and timing of various well known subsurface features (Sabine, Monreo, Wiggins uplifts etc...). This is a concerted effort involving UT Dallas (Dr. Stern), Missouri State University (Dr. Mickus), Texas Tech (Dr. Gurrola), and LSU (Dr. Persaud).



Carl Richter



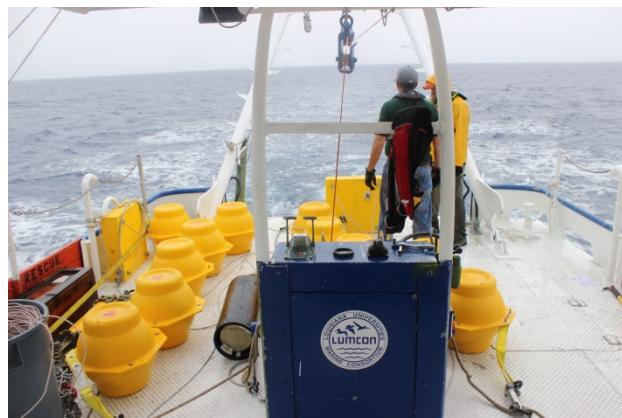
During the past year Carl Richter continued his work on the magnetics of deep-sea cores from the North Atlantic and the West Greenland Margin, in

addition to projects in environmental magnetism and participating in a research expedition near the Deepwater Horizon site in the Gulf of Mexico on the LUMCON ship R/V Acadiana. A major research project funded by the National Science Foundation into resolving centennial scale geomagnetic field variability and environmental change of the Mediterranean Outflow Water at the West Iberian Margin ended with the thesis defenses of Oludamilola Adesiyun and Lindsey Horton, who collected and analyzed Site U1389 data over the past two years. We presented Lindsey's work at the 2015 AGU in San Francisco and Oludamilola presented first results at the GSA meeting in Baton Rouge in March. This summer will be spent combining the results with data from the deeper part of the section from Gary Acton at Sam Houston State University into a publication or two.

Graduate student Alex Dixon is still in the process of analyzing the anisotropy of magnetic susceptibility of these cores with the goal of determining the current strength and direction of the contourite system. He promised to finish his thesis and graduate this year! Sean Jensen is making good progress with the analysis of high-latitude quaternary records of the geomagnetic field recovered from the West Greenland Margin in Baffin Bay. Delmetria Taylor successfully finished her thesis project on the environmental impact of heavy metal pollution using magnetic susceptibility screening in Baton Rouge, which was started with former student Hannah Vedrines and Bill Schramm from the LDEQ. A presentation of the results at the AGU meeting in San Francisco generated great interest. Morgan Canezaro will continue this project with an emphasis on collecting more geochemical data with the XRF, although we are unfortunately experiencing delays because of a broken susceptibility meter. Carl is now in his third year as president of the Southwest Louisiana Geophysical Society and serves on too many committees on campus. He has been accepted to participate on an ocean drilling research expedition to investigate the Cretaceous climate and tectonics, taking cores in the Mentelle Basin and Naturaliste Plateau south of Australia.



Geophysics class laying out seismic equipment in front of Hamilton Hall.



Deploying acoustic equipment in the Gulf of Mexico, R/V Acadiana

Brian Schubert

It's been another busy year for the stable isotope lab with about a dozen graduate and undergraduate students using the facility to measure isotopic changes in sediments, tree rings, fossils, and even fish! This year we received new funding from the National Science Foundation to study geochemical changes in terrestrial organic matter across the Cenozoic, and have been active presenting our work at meetings across the state and country. Dr. Ying Cui, who was a postdoctoral researcher for the last 18 months, moved on to a new position at Dartmouth College. Before leaving, Ying had some of the research she did at ULL published in a top journal and has several more papers in the pipeline. We wish her the best in her new position!

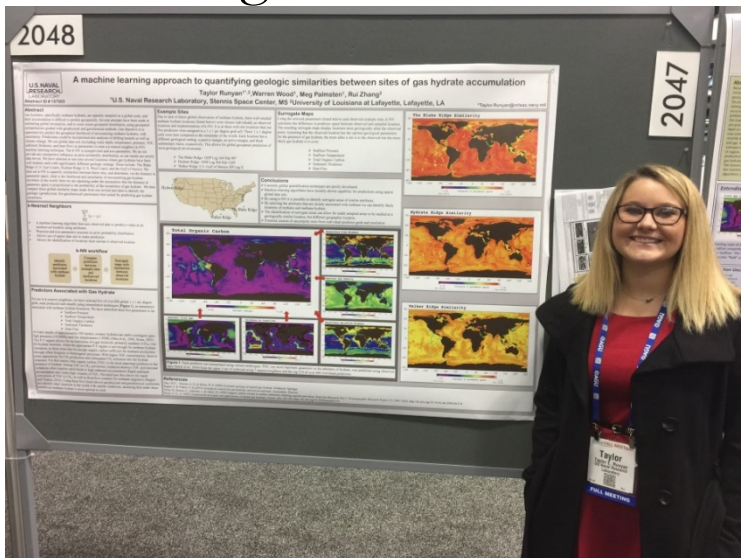
As per usual, I want to take this opportunity to highlight some of the excellent research being done by the students in the lab group. Without their hard work, none of this research would get done. I especially want to highlight the work of several students who are all planning to finish their Master's degrees in 2017: Collin Moore, Umatu Orike, Taylor Chapman, Steve Nevitt, and Rose Telus. Collin, whose work was highlighted on the School of Geosciences blog (<http://geosciences.louisiana.edu/geology-student-research-and-discoveries>) has come up with a novel method of using oxygen isotopes to quantify seasonal temperatures, and is applying this work to fossil wood from the Siberian Arctic. Umatu is using geochemical and XRF data to reconstruct changes in sediment sources at

Fossil Lake, Oregon – the same place where Dr. Martin discovered the fossil camel that's now on display at the Lafayette Science Museum. Taylor is testing a new proxy for quantifying past changes in atmospheric chemistry that is based on plant lipids found in fossil organic matter. Steve is using shallow sediment cores from southwestern Louisiana to identify changes organic matter sources to a coastal site. Rose is meticulously subdividing tree-rings into sub-millimeters thick slices with the hopes of identifying a chemical signal in the wood that can be linked to extreme rainfall events, similar to the ones that affected large portions of Louisiana in 2016.

Last, but not least, Dr. Yingfeng Xu continues to play a critical role in all of these projects by working daily to assure the quality of all of the data coming out of the lab. She deserves high praise for continuous operation of the equipment, and the smooth running of the lab.

As for me, I continue to teach geochemistry, clay mineralogy, and introductory geology courses each year, and offered a new class on stable isotope geochemistry last spring. The lab continues to have researchers from across the university using our facilities in Hamilton Hall and we look forward to continuing these cross-department collaborations. Last, but not least, our sons Alex and Noah are growing up fast, and are now 1 and 4 years old. They love playing outside and digging in the dirt... perhaps they'll be future geologists!

Rui Zhang



Dr. Zhang's MS student Taylor Runyan presented her thesis work at the 2016 AGU fall meeting.



Our graduate student Jade Bujard won the only award of the outstanding MS student of the College of Sciences and was nominated for outstanding master student school wide!

Jenneke Visser

We just finished the work on the 2017 Coastal Master Plan that is at the legislature for approval as I am writing this. Some of the forecasts made in this modeling effort are sobering, but they show the need for dramatic action to save some of the remaining coastal wetlands. I am deeply honored to have received the College of Sciences outstanding professor award this year. This is a major accomplishment in my career and reflects my excellent record of obtaining research grants and publishing the results. In my fall coastal sciences course, I teach about all the factors that go into our coastal wetland loss problem and the restoration tools that are used to combat it. This spring, I am teaching the soil and plant relationships course and my students are doing their own plant growth experiments at the Ira Nelson Horticultural Center. I also teach the plant science class online for the first time, which is very demanding, but hopefully will improve as more of the course content is developed.

Gabriele Morra

2016 was a really exciting and intense year. I have spent half on leave in Switzerland and the other half here in Lafayette. During my leave I used my teaching-free time to focus on completing the bulk of a textbook that I had been trying to write for several years. It is now in the hands of the editor and will be finally published in June 2017 by Springer Verlag. On my return to Lafayette I committed myself to writing more proposals to raise the necessary funds for my research, to participate at enough international meetings to present my result and to create and maintain a robust collaboration network.

I went to the GSA meeting in Denver, CO, where I also co-organized a session with Dr. Gottardi and to AGU fall meeting in San Francisco where I had one talk and two poster presentations. During this time I helped to recruit a student who will come to Lafayette to work with me and I met junior faculties of other US universities with whom I started to collaborate. Between 2016 and the beginning of 2017 I contributed as a PI or Co-PI to four proposal for funding on working on underwater landslides and on crustal fault dynamics. I am crossing the fingers on the outcome of the proposals.

On a personal note, my polycystic kidney disease is limiting my kidney function and I am on the list for receiving a donor kidney. I am expected to need dialysis soon, and had the operation for the access

point over the Christmas holiday. One of the symptoms of kidney failure is anemia and that affects my energy level. Medications help, but it is difficult to perform at the level that I did in the past. I therefore decided to retire at the end of the next academic year.



In 2016 Prasanna Gunawardana, the first student that I entirely supervised during his graduate work, completed his thesis and we published the results in the Journal of Geodynamics. I wish him good luck for his new adventure as a PhD at Syracuse University.

My research in 2016 was mainly characterized by actively supporting my graduate students to complete their research, among them Jason Cooper and Brian Fischer, who are physics graduate students working on topics in geoscience (the first on a new solver for Darcy Flow for hydrogeology and the second on gas-magma dynamics in volcanic conduits) and who will both complete their thesis in 2017. I was glad to see the completion of the thesis of Daniel Conlin on geothermal flow in Nevada's crustal faults, work supervised by Raphael Gottardi and me. We also began to work with graduate student Samuel Yun on a continuation of that project.

On the family side, I am relieved to say that my wife has finally reached me here in Louisiana and our daughters have very quickly learned English, go to a wonderful school and are very happy here.

Jim Martin

In 2016, conversations around James Martin, curator at the UL Geology Museum eventually included two words: giant camels. In 2015, with financial help from members of the Lafayette Geological Society, and later, a donation from Cathy Bishop and Brian Quebedeaux, we recovered beautifully articulated front legs of a large giant camel. These legs are on display as part of our Giant Mammals display at the UL Geology Museum/Lafayette Science Museum. In 2016, we did even better. During the planning process for the expedition back to southern Oregon, we again received support from our previous donors, and Dr. Jen Hargrave and I secured a \$20K-grant from the Bureau of Land Management. Thus armed with adequate finances, we returned to recover more from the 2015 specimen and to prospect for more of the front legs of a smaller individual found in 2014. We hired students and staff, had the fantastic assistance of expert volunteers, and contracted with a 3D laser surveying firm from Portland. After weeks of hard digging, we finally completed the excavation of the 2015 camel and found the remainder of the 2014 individual. This camel turns out to be smaller and the teeth exhibit extreme occlusal wear indicating a very old camel at death. Based on these parameters we tentatively conclude the smaller skeleton represents an old female, whereas the large 2015 camel was a bull. We are slowly removing the bones from the surrounding rock at the Museum, where visitors can view the operations through a large glass window. Visit the museum often to track our progress. These camels will eventually become a major display at the Museum.

In April, we opened the third installment of our prehistoric giants displays with Giant Mammals. The display includes elephants, giant ground sloth, huge Irish Elk skull, giant bison, and a range of large carnivores, including two saber-toothed cat skulls made from bronze. As a result of these activities and securing the giant camels for Lafayette, Mayor Joel Robideaux

recognized me and my family supports as honorary citizens of Lafayette.



In November, we closed out a \$350K grant that Dr. Martin secured from the Bonneville Power Administration. This had provided funding for numerous undergraduate and graduate students over the last three years. Huge numbers of small fossils were recovered by the students and most are already curated into the systematic collections at the Museum.

Somewhere in between, Dr. Martin managed to publish two papers:

Martin, J.E., 2016, A Hexanchid Shark from the Late Cretaceous Pierre Shale Group of the Western Interior Seaway of North America: *Proc. SD Acad Sci.*, 95:69-72.

Martin, J.E., and Johnson, S.E., 2016, Osteology of a Complete Skeleton of *Dipoides stirtoni* (Rodentia, Castoridae) from the late Miocene of northern Oregon: *Paludicola* 10(4):189-206.

New Faculty and Staff

Aubrey Hillman



I'm excited to be joining the faculty in the School of Geosciences this year. As an undergraduate, I attended the University of Maryland Baltimore County where I received a BS in Environmental Science and a BA in Archaeology in 2009. I received my

Master's in Geology in 2011 and my PhD in Geology in 2015 from the University of Pittsburgh where I studied the timing and magnitude of anthropogenic impacts to lakes in Southwestern China. For the last few years, I was a post-doctoral research fellow at the Byrd Polar and Climate Research Center at the Ohio State University where I studied natural climate variability recorded in lake sediments in China and Peru.

My current research is focused on assessing pre-industrial and industrial human impacts to landscapes. In many regions of the world with long histories of human occupation, people began having a measurable impact on the landscape several thousands of years ago. I'm interested in establishing what impact human activities had on natural lake hydrology, sediment delivery to lake systems, and the trophic status of lakes. Currently I'm involved in projects in China, Peru, Spain, and Southwestern Pennsylvania. Louisiana has an abundance

of lakes that I'm excited to study in order to characterize human impacts to these systems over the last few hundred years! I'm also interested in continuing to develop records of lake level through the Holocene in order to reconstruct past changes in precipitation. Using oxygen isotopes, I've developed semi-quantitative estimates of lake level variability in monsoon regions, where precipitation is highly seasonal. I'm most interested in working with archaeologists and historians to link these past changes in precipitation to their impact on societies.



Research Highlights

Oregon Fieldwork



The University of Louisiana at Lafayette Geology Museum completed summer fieldwork in the desert of south-central Oregon. Dr. James Martin and Dr. Jennifer Hargrave led the intrepid field crew, which included faculty, student workers, and volunteers, on the six-week fossil camel dig. We returned to the same location that previously yielded two skeletons. Armed with ground-penetrating-radar data, we returned in hopes to find more. We began by scouring the surface of the two locations and preparing a grid. We systematically dug



Camel skeleton prior to jacketing.

the grid system, paying special attention to the areas designated as hits from the radar data. We quickly found the radar was great at finding large basalt boulders, caliche, and even modern rodent burrows, but not so great at finding fossil bones belonging to the giant camel, *Megatylopus*. However, we persisted and found nearly 200 additional bones and fragments of the camel collected in 2015.

The team also worked a camel locality discovered in 2014. Here, the sediment was much more consolidated and work was completed with chisels, hammers, and even an electric rotohammer. For weeks, we dug, and hammered, and hoped. The blood, sweat, and tears paid off as we finally struck bone. As we followed the bone, we quickly discovered an associated skeleton. We excavated the hind legs, pelvis, vertebrae, scapula, and even the lower jaws and skull pieces! This find has proven to represent the most complete *Megatylopus* skeleton.

At the end of our expedition, we filled in our quarries headed south with our treasures and great memories of the summer. As one student reflected: "This fossil dig in Oregon was an invaluable experience as it allowed us to view the context of what some of us have been working with and around for years. To view the fossils encased in the earth and to participate in the excavation of said fossils was honestly one of my childhood dreams come true."

Preparation of the fossils is underway at the museum. Come check on our progress at the University of Louisiana Geology Museum.



Byron Ebner using the same technique in which he made the initial discovery.

Geology Museum

Update on Exhibits and Collections

The University of Louisiana Geology Museum enjoyed another busy, productive year. The ULGM, in conjunction with the Lafayette Science Museum, opened the third and final installment of the “Fossil Giants” exhibit in April. This component focuses on “Giant Mammals” of the Cenozoic. We began taking down the second exhibit and setting up the final one over Spring Break, although preparations began well before. We had plenty of help from UL students, faculty, and staff, as well as Lafayette Science Museum staff and volunteers. The exhibit was ready for the April 1st opening. Some of the visitor’s favorites include mastodon, *Mammuth americanum*, the cave bear, *Ursus spelaeus*, and the towering giant ground sloth, *Megatherium americanum*. The museum hosted over 55,000 visitors in 2016. The “Giant Mammals” exhibit will be up through Festival International. The next ULGM exhibit, “Petroleum in Louisiana” will open this fall.

The museum continued to provide students with research assistantships and employment in the preparation lab throughout the fall and spring. We have completed most of the smaller jackets collected this summer, including the lower jaws of the giant camel. We

hope to open the remaining large jackets soon. The students’ hard work has helped reduce the backlog of specimens and matrix. They have honed their identification skills and, as a result, the ULGM has exceeded the 100,000-specimen mark of catalogued objects in just over three years!



Lower jaws from the giant camel, *Megatylopus*, collected this summer.



Aleta McBane, a ULGM volunteer, touches up the paint of the Irish Elk, *Megaloceros giganteus*.



Dr. James Martin holding up the backbone of *Platybelodon* during construction.

New master's degree in Environmental Science

The Louisiana Board of Regents has approved a new master's degree in Environmental Resource Science in the School of Geosciences to begin in Fall 2017. The purpose of the program is to increase the pipeline of highly-trained students who can address challenges related to Louisiana's environmental resources. This master's degree program will focus primarily on water and soil resources, including their investigation/characterization, management, remediation, and associated technologies. Students will also be able to probe the relationships of these physical resources with biological processes. Environmental science jobs are expected to grow by 11% nationally from 2014 to 2024, according to the U.S. Bureau of Labor Statistics.

The master's program in Environmental Resource Science will be interdisciplinary, combining a variety of the foundational science domains (e.g., Physical, Earth, and Biological Sciences) that were identified in the FIRST Louisiana report. Environmental Resource Science is both strategic for Louisiana and aligned with Louisiana's workforce needs. Louisiana's core industry, science, and technology sectors are direct reflections of the natural resources available in our state. For example, Louisiana is the third leading producer of rice in the U.S. and is a global hub for the upstream and downstream petroleum industry. These industries require tremendous quantities of high-quality water. Our state also hosts 40% of the

nation's freshwater wetlands, which are critical to the seafood industry and serve to mitigate coastal flooding. Like water, soil resources are fundamental for agricultural activities and coastal restoration efforts. The focus of our program in combination with our Gulf-coast location and the expertise of the associated faculty will make this a premier program for Louisiana and throughout the region. Our program in Environmental Resource Science will further advance Louisiana as a national leader in environmental research and development

The Master of Science degree program in Environmental Resource Science will prepare students to become highly-trained environmental scientist ready to address the challenges related to the most critical of the world's environmental resources: water and soil. Through an innovative interdisciplinary approach, students learn about the interactions among water, soil, and human activities within a biophysical system. We incorporate core courses in Environmental Science and Geology and supplement them with elective courses in biology, civil engineering, and chemistry. Some of our current research areas include: fluvial geomorphology, lake sediment records, isotope geochemistry, climate reconstruction, hydrology, water quality, water resources, soil resources, wetland and coastal systems, and environmental geohazards.

2016 in Pictures



Gifts to the School

We would like to thank all those who donated to Geology in 2016

☞ Donations up to \$1000 ☛

*Richard Ball
Bennett Systems
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James Dungan
Jane Estes-Jackson
ExxonMobile*

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☞ Donations \$5000 to \$10,000 ☛

Christopher Bradley

Deep South Energy

☞ Donations > \$10,000 ☛

Bureau of Land Management

Lafayette Geological Society

Edmond Sofymosy

Student Honors and Awards

Dr. Visser was awarded the College of Sciences Outstanding Professor Award.
 Graduate students Tim Shane won the Spring 2016 Outstanding Master's Graduate Award.
 Jade Bujard won the UL Alumni Association College of Science Outstanding Master's Graduate Award.

Geology Students

^(†)Graduate Students

Bill Paine/LGS Endowment Scholarship

^(†)Alexander Beck, Abigail Breaux,
^(†)Kevin Broussard, ^(†)Daniel Conlin
^(†)Duncan McIntosh, ^(†)Joseph Morris,
^(†)Matt O'Leary, ^(†)Samantha Robillard
^(†)Rose Telus, ^(†)Eric Wang

Eberhart E. Leschin Scholarship

Daniel Bowen, ^(†)Umatu Orike

Imperial Barrel Scholarship Fund

^(†)Zachary Ghalayini, ^(†)Nathan Quick, ^(†)Anne
 Brennan, ^(†)Hunter Lipman, ^(†)Joseph Morris

Joe Battle/LGS memorial geology scholarship

Kristin Ball, Andrew Whisnant, Terri Bannister

Marathon Oil Scholarship

^(†)Jude Alekhue

Nolan Badeaux Endowed Scholarship

^(‡)Joshua Cecil, Peace Eze, Chloe Letulle

Paul Toce Endowed Geology Scholarship

^(‡)Michael Mahley, Daniel Richard, Aro Terrell

Pogo Producing C. Scholarship

^(†)Eric Muchiri

School of Geosciences Scholarship

Alexis Blair, Eric Theriot, Eric Udick,
 Leslie Valentine

Tim Dore Geology Scholarship

Spencer Stelly, Mandi Lalonde, Ross Ledoux,
 Matt Richard, ^(†)Jade Bujard

Bill & Heather Finely Non-Endowed Geosciences Scholarship

^(†)Jade Bujard

Sigma Gamma Epsilon Field Camp Scholarship

Brittany Fuller

Marvin & Hazel Harvey Morris Endowed Geology Scholarship

^(‡)Jean Pierre Dupuy

QEP Resources Education Foundation Scholarship

^(†)Logan Adams, ^(†)Joseph Morris

Halliburton Geosciences Scholarship

^(†)Oludamilola Adesiyun, ^(†)Amber Butler-
 Atwood, ^(†)Ashley Filkins, ^(†)Natalie Merrell,
^(†)Fabiane Santos Netos, ^(†)Leslie Valentine

Fieldcamp Scholarship

Alexis Blair, Abigail Breaux, Joshua Cecil,
 Joseph Chapman, Charles Doll,
 Peace Eze, Ross Ledoux, Matt Richard, Aro
 Terrell, Eric Udick

Southwest Louisiana Geophysical Society Scholarship

^(†)Jade Bujard, ^(†)Jude Alekhue,
^(†)Eric Muchiri, ^(†)Nathan Quick

Environmental Science Undergraduate Students

Dr. Jorge Gonzales-Dean Joel Fletcher Memorial
Courtney Poirier

Tommy Sanders
Sydney Manuel, Taylor Girouard

Dr. S.L. Solymosy & Mrs. G.A. Solymosy Scholarship
Andrew Bull, Joshua Foster, Joseph Enk

Farmers Merchants Bank & Trust Co. Scholarship
Yancey Wade

South Louisiana Mid-Winter Fair Scholarship
Kaitlyn Lejeune, Bryce Landreneau, Grant Kleiner, Haley Vincent, Meg Rinaudo

Charles Joseph Miller & Vivian Melancon Miller Scholarship
*Alaine Devalcourt, Tyler Soileau, Jeremy Irion, Ryan Reames,
Elizabeth Manuel, Logan Delcambre, Ross Vogel, Samantha Roberson*

Charles and Julia Walker Bourque Scholarship
Philip Vanbergen

Mary Sandoz Brown Scholarship
Mikayla Meaux, Morganne Guidry

Overton Cade Scholarship
Helen Lester

UL Lafayette Collegiate FFA Chapter Scholarship
Ian Isaacs

A trip down memory lane...



Dr. Duex, Ms. Cornell, and Dr. Willis at the top of Cerro Castellan, during the winter field camp to Big Bend National Park in 2001.

Degrees Granted in 2016

Spring 2016

Bachelor of Science in Geology

Seth Andrus, Kalli Dubois, Byron Ebner, Daniel Gilder, Cynthia Ledet, Matthew McLain, Christian Monlezun, Michael Orlando, John Williams

Bachelor of Science in Environmental Sciences

Joshua Foster, Karyante Franklin, Kyle Landeta, Simbrey Majors, Mikayla Meaux, Jeremy Irion, Ian Isaac, Gary Wilkerson

Master of Science in Geology

Ryan Boucher, Ayrton Costa, Hong Hoang, Timothy Shane

Fall 2016

Bachelor of Science in Geology

Clovis Assi, Scott Brewster, Charles Doll, Jean Pierre Dupuy, Brittany Fuller, Bo McDougald, Minh Nguyen, Tyler Nichenko, Danielle Studebaker, Aro Terrell, David Teter

Bachelor of Science in Environmental Sciences

Arianna Bailey, Andrew Bull, Alaine Devalcourt, Mary Dupree, Grant Kleiner, Bryce Landreneau, Kaitlyn Lejeune, Elizabeth Manuel

Master of Science in Geology

Oludamilola Adesiyun, Jared Angelo, Terri Bannister, Jade Bujard, Daniel Conlin, Jacob Juneau, Hunter Lipman, Shanna Mason, Michael O'Brien, Maxwell Schaper, Delmetria Taylor

Upcoming Events

Gulf Coast Association of Geological Societies UL Geology Museum



Meet us at the 67th Annual Convention of the Gulf Coast Association of Geological Societies hosted from November 1-3, 2017 by the San Antonio Geological Society.



Come to the museum! The Geology museum has moved to downtown Lafayette, to 3000 square feet of space within the Lafayette Science Museum.

FOSSIL GIANTS: Dinosaurs and Mammals opened to the public Saturday, April

1st, 2016. The Lafayette Science Museum is located at 433 Jefferson Street, Lafayette, Louisiana in the heart of Downtown. Call 337-291-5544 for more information.

Lafayette Geological Society Annual Crawfish Boil

Saturday, April 29th

11:30 - 3:30

UL Lafayette Alumni House

\$40 per person / \$20 for students

Call 337.482.6647 to reserve your tickets today!



Buy your ticket online at

http://lafayettegeologicalsociety.org/wp/?page_id=1974

How to support Geology or Environmental Science

Donations can be made online using the UL foundation website; however, it is quite a challenge to figure out how to donate directly to Geology or Environmental Science using their site. Instead we recommend making a check out to the UL foundation with instructions for directing the money to a specific area or fund in the notes section of the check. Mail the check directly to the School of Geosciences and we can hand deliver it to the foundation to ensure it gets to the right place. Please contact us if you have further questions (geology@louisiana.edu).

We encourage **Geology** donors to use one of the funds described below. Please contact UL Geology directly if you have a question or if you require special arrangements.

1. **The UL Lafayette Geology Faculty & Student Development Fund (#21654)**. This is a non-endowed fund that is designed to support the immediate financial needs of the Geology program. We suggest that donations under \$1000 be directed here.
2. **The UL Geology Student Technology and Research Fund (#7201)**. This is an endowed fund that supports undergraduate and graduate student research activities.
3. **The UL Geology Growth Fund (#21676)**. This is an endowed account that is designed to grow over time to support the long-term needs of the Geology program.
4. We encourage **Environmental Science** donors to use the **UL Lafayette Environmental Science Fund (#05681)**. This is a non-endowed fund that will help to support the immediate needs of the Environmental Sciences program. We hope to develop and open an endowed fund for long-term growth in the future.