Newsletter, June 2024

UNIVERSITY of LOUISIANA LAFAYETTE

Ray P. Authement College of Sciences

SCHOOL OF GEOSCIENCES

School of Geosciences Newsletter

June 2024

University of Louisiana at Lafayette

Inside This Issue

Greetings from the Director

It's a pleasure to bring you the 2024 newsletter from the School of Geosciences! It was a busy year welcoming new faculty and celebrating the impactful careers of the tremendous faculty who retired. Dr. Bingqing Liu, an expert in remote sensing, joined us this past fall (see **New Faculty, page 3**) and we have three new faculty joining us this coming Fall. We've also celebrated the recent retirements of Dr. Gary Kinsland, Dr. Tim Duex, and Mr. Jim Foret. It was wonderful to see so many friends share in these celebrations with us!

Recent years have seen a growth in our School's research, which has helped to support the university's new designation as a Carnegie R1 University. Our faculty and students have received a host of new grants, papers, and awards; you can read the **faculty updates** starting on **page 4** and **student awards** on **page 22**. To stay up-to-date throughout the year, however, I encourage you to follow our social media feeds on Instagram (@ulgeosciences), Twitter/X (@ULGeosciences), and Facebook (@UL Lafayette School of Geosciences). Our School of Geosciences student group, **ULGS** (**see p. 20**), has also been very active with a visit to the Houston Museum of Natural Science, solar eclipse viewings (in both Louisiana and Arkansas), and a workshop to prepare resumes and practice interview skills. The ULGS students are also responsible for the fantastic faculty portraits you'll see throughout! Follow them on Instagram @ulgeosciencesociety for more!

After five years serving as Director of the School of Geosciences, Dr. Eric Ferré stepped down from this position in Fall 2023 to focus more of his time on his research, teaching, and family. Thanks to the generosity of Paul C. and Patrick T. McWilliams, he was able to lead two field trip classes last year to Texas (Big Bend National Park) and California (Palm Springs), and is again Field Camp Director for the field camp this summer. I share with the entire School, a big thank you to Eric for five years of leadership!

Other new leadership changes include at the **Lafayette Science Museum** (**see page 15**), now under the College's direction, with our own Dr. Jennifer Hargrave taking the reins as the new Museum Director! New initiatives include programing such as STEM Saturdays and Summer of Science, as well as Documentary Date Night for unique evening events. If you have not visited lately, be sure to come check out all the new changes and exhibits!

Last, our PhD Program in Earth and Energy Sciences, in collaboration with the Departments of Chemistry and Physics, graduated our first cohort of students this Spring, including two of our past School of Geosciences graduates (Dr. Courtney Chicola, BS 2017, MS 2019; and Dr. Ernest Antwi, MS 2021)! The PhD Program and our new GIS certificate program continue to see strong demand and increasing numbers of applicants. If you are interested in pursuing your education further with these new offerings, we encourage you to reach out!

If you live/work in or are planning to visit the area, please stop by Hamilton Hall. We'd love to see you and hear about all you've been up to since graduating!

Sincerely,

Brian Schubert, Interim Director

Newsletter Editor

WR (Bill) Finley

There have been significant changes in people at all the teaching and learning levels of activities at the University. Check out what the current batch of professionals are up to and let us (me) know if you like what you see. Your feedback helps maintain focus and gets the next generation motivated/educated to carry on our geoscience traditions.

Meanwhile, the newly formed University of Louisiana Geosciences Society (ULGS) students took it upon themselves to render geoscientific interpretations for their favorite mentor/professor/instructor. Pretty cool (LOL), I'm transgenerational.

And don't put all your Geoscientists in one bucket.

New Faculty

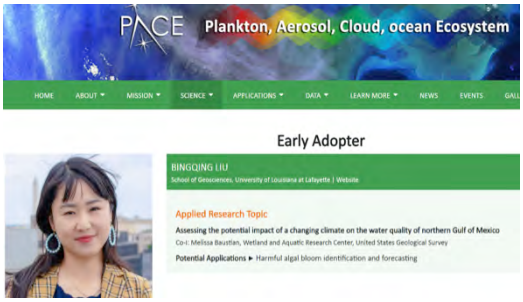
Bingqing Liu

Dr. Liu joined the School of Geosciences faculty team in August 2023. Dr. Liu is a satellite oceanographer seeking a better understanding of constraints to coastal carbon dynamics, aquatic ecosystems biodiversity, and coastal water quality responses to climatic changes, extreme events, and anthropogenic stressors. Her research entails development of satellite remote sensing algorithms based on marine optical theory and field observations integrated with remote sensing and other data products including computer model outputs of ocean processes studies, particularly in the coastal ocean. She has participated in research cruises to the continental shelf in the northern Gulf of Mexico and major estuaries of Texas, Louisiana and Florida. Currently, she serves as a lead-PI or co-PI for projects funded by federal and state agencies such as NASA, NOAA, ERDC, and EPA. Prior to her current position as an assistant professor at UL Lafayette, she served as the Deputy Director for the RESTORE Act Center of Excellence for Louisiana (LA-COE), a position she assumed after earning her Ph.D. in Oceanography and Coastal Sciences from Louisiana State University.

Dr. Liu teaches GIS I & II (ENVS 455 and 464), Remote Sensing (ENVS 473), and Advanced GIS (ENVS 487). She integrates robust hands-on experiments both in the field and laboratory settings for remote sensing measurements. Additionally, she incorporates Python programming into her classes, welcoming all students to embrace spatial analysis, programming skills, and an open science culture. Dr. Liu is dedicated to open science and cultivates this ethos among her students, particularly in the context of climate change.

During her first year at UL, she secured a new grant from the NASA EMIT program and was selected as one of NASA's PACE program hyperspectral early adopters to study hyperspectral applications in coastal ecosystems. She also received funding from the NOAA Hypoxia Program to research the dead zone in the northern Gulf of Mexico. She collaborates closely with Louisiana state agencies; recently, she was awarded a grant by the Coastal Protection and Restoration Authority (CPRA) Coastal Science Assistantship to support a graduate student studying phytoplankton community dynamics in Louisiana's estuaries. Additionally, she won the National Wetlands Award 2023 for her contributions in coastal wetland carbon modeling and remote sensing monitoring to examine the responses of coastal blue carbon habitats (such as black mangroves and marshes) to meteorological/climatic changes and restoration activities in Louisiana.

Learn about Dr. Liu's work and her team here: https://sites.google.com/view/marineopticslab.



Dr. Liu serves on the NASA PACE Early Adopter Program, collaborating with state agencies to assess climate impacts on northern Gulf of Mexico water quality.

Congratulations to Chisom Okwuchi, a dedicated master's student in Environmental Resource Science program, for securing second place at the 2024 LA RSGIS Workshop in Mandeville, LA!

Faculty and Instructor Updates

Tim Duex

Returning to a lecture hall near you

"GEOL 470: Groundwater"

Retired and Loving It

Just a little rough around the edges.

Gary Kinsland

When I run into past students, they always ask two questions: 1) Have you retired? and 2) Where are your girls?

Yes, I retired at the end of the Spring semester 2022.

Many of you remember Cynthia my daughter with Leslie. She is 52 and now a faculty member in the Chemistry & Chemical Biology department at Cornell from which she earned her Ph.D. Mikaila, 25, and Victoria, 23, are my daughters with Kellie (real estate agent). Mikaila is Employer Relations Coordinator, at the Denver Downtown branch of the University of Colorado. Victoria is a Production Engineer at Westlake Chemical Corporation in Longview, TX.

When, in the summer of 2021, I began to consider retirement, I asked Kellie when I should. Her answer was wise: "Sooner rather than later…but don't quit." I had already learned from being "locked" down during COVID that I do not like being alone at home. In 2021, we published an article which received considerable worldwide attention (Kinsland, Gary L., Kaare Egedahl, Martell Albert Strong, Robert Ivy, 2021, Chicxulub impact tsunami megaripples in the subsurface of Louisiana: Imaged in petroleum industry seismic data, Earth and Planetary Science Letters, volume 570, 15 September 2021, 117063, https://doi.org/10.1016/j.epsl.2021.117063). Since then, I have been busy acquiring more seismic data from companies and working with Rui Zhang to image and interpret the data. We now have almost 1000 sq. mi. of seismic data from the paleo shelf of Louisiana and down over on the paleo slope. Next year I hope to have another reference to give you.

Otherwise, my life continues. People say we do not have seasons here in Louisiana. I say there are three seasons: Deer hunting season, Softball season, and Summer.

Davide Oppo

The last few years have been eventful in the Sedimentary Basins Research Group. Our group's research has been dedicated to two themes: methane seeps and sedimentary processes along continental margins. The investigation into methane seeps, supported by grants from the LA Board of Regents and the American Chemical Society, is a crucial endeavor to understand fluid migration and gas hydrate dynamics offshore in the Gulf of Mexico. This work is further supported by TGS and Western Geco through data contributions. An additional grant from the National Science Foundation will support exploring various methane seepage areas along the US East Margin. This work will include three research cruises for sediment, gas, and water sampling, as well as seafloor mapping, using various coring devices, autonomous underwater vehicles, and HOV *Alvin*. In the coming years, we will recruit various students, including doctoral, master's, and bachelor's. In October-November 2024, Gracie and I will travel to Chile to board the Schmidt Ocean Institute's R/V *Falkor(too)* for a one-month research cruise to study and sample various methane seepage areas with remotely operated vehicles and coring devices.

The research on fluid escape continued with the publication of new research papers on the dissociation of methane hydrate recorded in the carbon isotopes of benthic (Miliolida) foraminifera along the Indian Margin (EPSL, v. 609), the early burial mud diapirism induced by lateral overpressure transfer along the slope of a deformed foredeep (GRL, v. 48), and the record of cross-evaporite fluid escape in the northern Levant Basin (Basin Research, v. 33). My work on sedimentary processes along continental margins included the publication of papers on mass wasting recording the first stages of the Messinian Salinity Crisis in the eastern Mediterranean (Geology, v. 51(7)); on Active faulting controls on bedforms development on a deep-water fan (Geology, V. 49(12)); and Medium-Sized Paleo-Tsunami Reconstruction by a Deep Neural Network Processing Sedimentary Deposits (Earth and Planetary Science, v. 11(1). I received the 2023 AAPG Foundation Inspirational Geoscience Educator Award and the 2024 University of Louisiana at Lafayette Outstanding Master's Mentor Award.

We are thrilled to welcome two new PhD candidates to our group. Miss. Gracie Babineaux, a National Science Foundation Graduate Fellow, is investigating the influence of methane seepage on foraminifera and its recording in the sediment column. Her contributions to the American Geophysical Union Fall Meeting since 2021 have been invaluable. Mr. Ferdinando Cilenti is applying 4D seismic monitoring to gas hydrate/cold seep systems in the Gulf of Mexico, research that could significantly enhance our understanding of subsurface fluid migration and emission at the seafloor.

The research on sedimentary processes along continental margins developed with new projects with the support of BP and the Lebanese Petroleum Authority. MSc students Miss. Aseeya Mohamed and Mr. David Matte graduated with two theses on sediment instability along the Sigsbee escarpment in the Gulf of Mexico. Aseeya will soon start working for WSP USA, and David is working at Fugro USA

Marine. Miss. Margaret Dittman graduated with a thesis on the characterization of the seafloor geomorphologies in the Levant Basin of the Mediterranean Sea and now works for Fugro USA Marine.

Miss. Abigail Watson graduated with a thesis investigating the relationships between salt tectonics and sediment routing along the slope of the Levant Basin offshore Lebanon. Miss. Juliet Aralu master's characterized the distribution and origin of paleo-pockmarks in the Gippsland Basin, offshore Australia; she now works for Fugro in Houston. Current Master's student, Miss. Peyton Dardeau and Mr. David Starkovich are working on sediment instability in the Gulf of Mexico.

I'm a cowboy
On a steel horse I ride
I'm wanted, (wanted)
Dead or alive.

(Bon Jovi)

Brian Schubert

First, I want to congratulate the awesome students who completed their MS degrees: Allison Higdon, Danielle Noto, and Ryan Hood all successfully defended their theses! Danielle also earned 1st place at the Lafayette Geological Society Poster Competition for her work using stable isotope measurements across tree-rings to estimate seasonal temperatures in the Siberian Arctic. She is now pursuing her PhD at LSU and sailed on the IODP expedition 401 in the Mediterranean Sea this past winter. Allison studied the effects of soil type on tree-ring oxygen isotopes by comparing measurements she made on trees growing in Kisatchie National Forest to those made previously by Robert Narmour (MS, 2019) from Persimmon Gully, a poorly drained site in the southwestern part of the state. She is now working for Hydro-Environmental Technology, a Louisiana based environmental consulting and geological services firm. Ryan, on the other hand, studied carbon isotopes as a proxy for seasonal rainfall in Louisiana, which is especially difficult given our irregular rainfall. Despite these expected difficulties, he found strong correlation between the measured and modeled rainfall amounts, paving the way for future work to extend our records of rainfall beyond the historical record. Ryan continues to work as a field geoscientist with Oceaneering.

Allison Higdon (front) and Danielle Noto (back) loading samples into the isotope-ratio mass spectrometer in the School of Geosciences, Hamilton Hall. Photo by Doug Dugas, University of Louisiana at Lafayette.

Dr. Yingfeng Xu continues to train students and keep the lab running smoothly. In her ever-expanding roles, she continues to be an invaluable asset to our department, and patient worker with our students. Postdoctoral researcher, Dr. Jacob Warner, started a job as an Assistant Professor at SUNY-Oneonta, where he teaches a wide range of environmental and geography courses, while continuing his paleoclimate research.

My responsibilities within the School increased significantly this past year due to my role as Interim Director, but I still had opportunities to travel to Norway for new collaborations at the University of Oslo through their new Centre for Planetary Habitability. This is a new institute focused on study of the key conditions for planetary habitability that permit the continued survival and evolution of life. As a collaborator in this project, my role is to study atmospheric evolution through the geological record using geochemical proxies. This is a 10-year project that just started last year, so I hope to have more to share in the coming years!

Last, we moved recently within Lafayette and set up a new garden and are slowly converting small areas of lawn to native plants. Alex and Noah are now 8 and 11 years old – Noah will be starting middle school in the Fall and Alex will be in 3rd grade! Both are enjoying baseball and Noah has proven to also be a capable golfer, competing in local junior tournaments.

Rui Zhang

Dr. Rui Zhang of the School of Geosciences was awarded Best Oral Co-Paper presented during The International Meeting of Applied Geosciences & Energy (IMAGE) 2023 in Houston, TX. The paper titled "Direct S-wave seismic data interpretation for channel sand reservoir at Sanhu area, West China," introduced an innovative technology to produce much clearer subsurface structure by using S-wave seismic surveys.

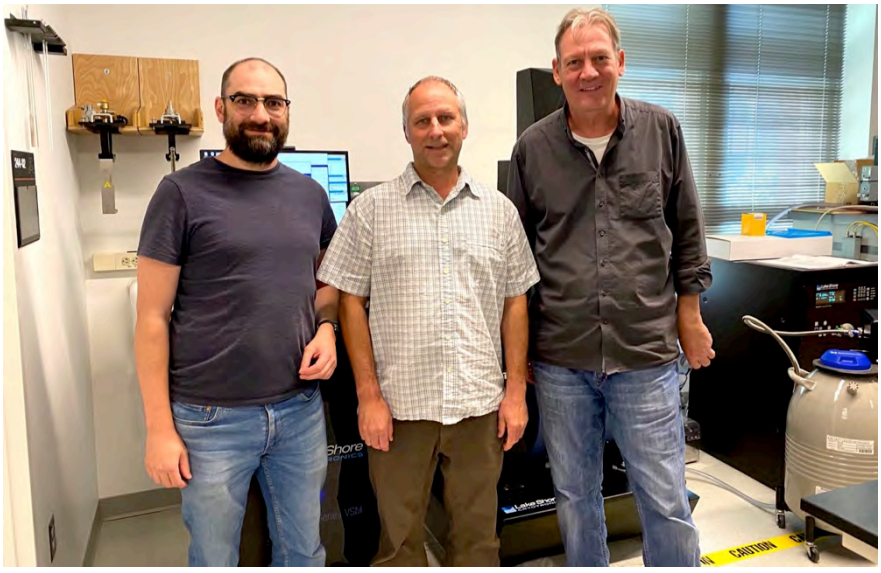
Visit the website link below for the 700+ conference abstracts and the complete award list.

https://www.imageevent.org/best-of-image-2023

Carl Richter

Carl Richter continued his work on the marine geology and geophysics of deep-sea drilling cores, in addition to projects in environmental magnetism of urban soils, anisotropy of magnetic susceptibility – strain relationships, and participating in several oceanographic expeditions near the Deepwater Horizon site in the Gulf of Mexico. Together with a team lead by Gabriela Petculescu from the Department of Physics, Carl is part of an interdisciplinary group which obtained a major research instrumentation grant from the National Science Foundation for a physical properties measurement system (PPMS), which is now housed in the Department of Physics and can be used to measure the temperature dependence of magnetic properties to identify the carriers of magnetization amongst many other physical properties. He was awarded a visiting fellowship to the Institute for Rock Magnetism, an NSF-funded research facility at the University of Minnesota, and spend 10 days during the summer of 2023 measuring magnetic properties from different current projects. Carl and co-authors presented their latest research at the AGU meetings in Chicago (2022) and San Francisco (2023), and the GSA meeting in Pittsburgh (2023).

Together with colleagues from Nanjing University, China, he recently published results from IODP Expedition 369 to the Great Australian Bight on the relative geomagnetic paleointensity of the Cretaceous Normal Superchron (CNS) in the Journal of Geophysical Research (2024). The CNS (121 to 84 million years ago) represents a ~40 million years interval of almost constant normal geomagnetic polarity. The new high-resolution and near-continuous findings indicate a much more dynamic geodynamo behavior during the CNS than previously thought and will provide important benchmarks to unravel the geodynamo evolution during the CNS.



Research Fellowship at the Institute for Rock Magnetism. Pictured in front of the magnetometer (VSM) are Maxwell Brown (facility manager), Peat Solheid (staff scientist), and Carl Richter.

In the School of Geosciences Carl has taken on the job of the graduate coordinator of the geology MS program, which requires interaction with potential graduate students and guidance for current graduate students. During the COVID lockdown Carl became an on-line certified teacher, but has not used this skill because in-person teaching – if possible – is definitely more rewarding for both the students and the teacher. Recently, Carl developed a new lab manual for one of the non-major service classes and a new class at the PhD-level in Earth System Science, a challenging class for the (relatively) new interdisciplinary PhD program in Earth and Energy Sciences.

Carl remains speaker for the Louisiana Board of Regents Speaking of Science program, which brings cutting edge science talks to schools throughout the State of Louisiana and He finished his term as President of the Southwest Louisiana Geophysical Society after seven years of service.

Carl touching the Jack Hills Gneiss at the Natural History Museum in Melbourne, Australia, during a trip in 2023. This rock contains zircons 4.4 Ga old, almost as old as Earth.

Durga Poudel

Graduate Student's Research on Coastal Environmental Sustainability

Under Dr. Poudel's supervision, six Master's students, Ananya Gelal, Babita Adhikari, Bipin Bastakoti, Lindsey Oxford, Nirmal Raila, and Rakib Hassan, in the Environmental Resource Science MS program, and one Ph.D. student, Katerine Eddings, in Earth and Energy Science Ph.D. program are doing their thesis and dissertation research under the umbrella of coastal environmental sustainability. Their research areas include understanding changes in soil health conditions, land use and land cover changes, spatiality of soil salinity across the coastal basins and marshes, nonpoint source pollution, water quality in relation to oyster habitat, storm events and coastal hydrology, and variations on temperature and precipitation across the coast. Students employ advanced Geographic Information System (GIS) and Remote Sensing methodologies, climate models such as the Weather and Research Forecasting (WRF) model, Soil and Water Assessment Tool (SWAT), and multivariate statistics to analyze the intricate interplay of land use, land cover change, soil health conditions, and hydrology. Students seek to unravel the complex interplay of natural and anthropogenic factors shaping coastal environmental sustainability while understanding overarching patterns and potential shifts indicative of broader environmental changes. Students utilize existing datasets from various sources such as Coastwide Reference Monitoring System (CRMS) stations, LDEQ, USGS, NOAA, LDWF, NLCD, SoilWeb, Weather Stations, MODIS Land Use Landcover dataset, satellite imageries, LiDAR dataset, and others. They also generate their own dataset depending on the scope of their research. Students' research provides valuable insights and evidence-based recommendations for sustainable land management practices for coastal restoration, soil health, habitat conservation, coastal resiliency, and overall coastal environmental sustainability.

Jorge Villa

Undergraduate students in the spotlight

Madeline Moore is a current undergraduate student in the School of Geosciences Environmental Science program with a concentration in digital geography. She began the program in Spring 2022 as a transfer student and is on track to graduate this May!

Madeline began her college career in 2019 at Southeastern Louisiana University where she studied mechatronics engineering technology. Progressing through this program, Madeline found herself in a position where she no longer felt passionate about her degree program or the careers it would lead her.

In August 2021, Hurricane Ida barreled through Southeast Louisiana, leaving Southeastern to close campus for a month. Madeline states this was the first time she was taken out of her normal routine, and she had the time to introspectively address her future. Knowing how passionate she is about the environment; Madeline made the decision to change her major to Environmental Science leading her to transfer to our program here at UL. Madeline expressed how quickly the community here made her feel at home.

Shortly after beginning the ENVS program, Madeline was accepted into the NASA Student Airborne Research Program (NASA SARP). This is an 8-week internship program in Southern California working at the NASA Armstrong Center and the University of California at Irvine. This program gives students the opportunity to engage in real-time data collection for an air quality research flight campaign as well as conduct their own independent research projects.

Madeline returned from SARP in August 2022, and began working as an Undergraduate Research Assistant in the Wetland Ecosystems Science Lab under Dr. Jorge Villa. Among helping the graduate students with laboratory duties, Madeline began her own research project where she became a certified Drone Pilot for the Wetland Lab to conduct her own research into linking remote sensing products to greenhouse gas fluxes from coastal ecosystems.

In April, Madeline was awarded the National Science Foundation Graduate Research Fellowship. This award will cover her tuition and a stipend for three years during her graduate studies! After graduating in May, Madeline will be presenting her undergraduate research at the Association for the Sciences of Limnology and Oceanography meeting in Madison, WI. When she returns, she will continue her research as she will begin the Environmental Resource Science master's program in the School of Geosciences!

Anna Paltseva

Welcome to the Delta Urban Soils Laboratory Update

We are thrilled to share the achievements and ongoing efforts at the Delta Urban Soils Laboratory. Since our official inception in 2021 led by Dr. Anna Paltseva, the lab has been pivotal in advancing urban soil science, focusing on research, education, and community service. The original opening event highlighted our commitment to bridging academic research with practical applications in soil remediation and sustainability. Experience the excitement of our opening day through this video. The lab offers to test soils from small producers, home and community gardeners to ensure soil suitability for healthy food production and human health from across the country. Develop new amendments and remediation mechanisms for contaminated soils. Work with communities to improve urban ecology by promoting sustainable gardening practices. The laboratory has embarked on several critical initiatives:

- **Heavy Metal Soil Concentration Inventory in Lafayette.** This project aims to map and analyze the distribution of soil contaminants funded by Louisiana Board of Regents. Our recent findings were shared in the news here.
- **Free Soil Testing Campaign:** As part of our community engagement, we provide free soil contamination testing for Lafayette residents, helping to ensure public health and safety. For more details, see KATC coverage and The Current.
- **Workshop Series:** Our workshops offer hands-on experiences to foster a deeper understanding of soil science for adults and children in Lafayette, Arnaudville, and New Orleans.

Current Research Highlights

- Heavy metal soil inventory, Lafayette, LA Launched in 2022 with Board of Regents funding, this project uses advanced GIS and X-ray Fluorescence Analysis to map metal contamination in Lafayette soils. Master's student Holly Heafner recently defended her thesis on related environmental inequalities.
- Portable XRF review for urban soil - This USDA NRCS-funded initiative evaluates portable XRF analyzers' effectiveness. It focuses on the accuracy of urban soil testing in Chicago and St. Louis, supporting master's student Eriell Jenkins' research.
- Soil magnetic properties and heavy metal analysis PhD student Rachel Kelk, under Dr. Eric Ferre, investigates soil quality and heavy metal distribution in Louisiana using magnetic properties and pXRF technology.
- Mycelium-based soil remediation (MySoRe) In partnership with the University at Buffalo, this project studies how dried mycelium can remediate lead in soils. Nick Miller, an undergraduate, plays a key role in the soil testing phase.

Anna Paltseva is a proud mentor of a vibrant group of students engaged in various aspects of soil research:

- **PhD Students:** Tyrell Lassair, Rachel Kelk, Nicholas Miklave
- **Master's Students:** Victoire Soumano, Eriell Jenkins, Holly Heafner, Eden Maier, Sydney Renard
- **Undergraduates:** Brenton Baquet, Francis A Obrien, Allana Judge, Kathryn Walker, Nicolas Miller, David Starkovich, Neva Powers, Morgan Filce, Tristen Ashworth, Joshua Barnhill, Hannah Cormier

Recent Achievements in Excellence

This year, Holly Heafner and Tyrell Lassair were honored with Sustainable Development Research Awards for their outstanding contributions to our ongoing projects. Additionally, last year, Eden Maier was recognized as the Best Teaching Assistant, highlighting our students' commitment to excellence in both research and education.

Dr. Anna Paltseva has made significant contributions to the University of Louisiana at Lafayette and the broader academic community during her tenure. With 13 published articles and the prestigious Soil Education and Extension Award from the Soil Science Society of America under her belt, her impact on soil science is profound. She is co-chairing the 2024 USDA Southern Regional NCSS Conference, which is taking place in Lafayette this month, where her students take an active role in presenting their research, which is a culmination of her career at ULL. Next month she is publishing her first book, "The Urban Soil Guide: a Field and Lab Manual."

Geology Museum
Old Bones Under New Management
UL Lafayette Science Museum Update
Dr. Jennifer E. Hargrave – Director

The Lafayette Science Museum has seen many changes during the last few years. Most notably were the Covid-19 Pandemic and the resulting budget cut that closed the Museum. The University of Louisiana and the Lafayette Consolidated Government negotiated a partnership to reopen the Museum. For the last three years, the Museum has operated under the direction of the Ray P. Authement College of Sciences and has continued the program of expanding and rotating exhibits begun by the School of Geosciences, but with little exhibit funding. Additionally, UL classes from geology and history disciplines are taught at the Museum for hands-on and real-world experiences and skills development.

The School of Geosciences continues to maintain their exhibit space, the paleontology laboratory, and rock, mineral, and fossil repositories. The vertebrate paleontology collections initiated in 2013 now total nearly 150,000 specimens with more curation proceeding. The mineral collection is being curated by Dr. Tim Duex, Curator of Mineralogy. Moreover, continued research continues by UL faculty and students, particularly in the realm of paleontology. Recent publications include the first North American bovid ungulate, the geology of the late Miocene Big Cut Locality in northern Oregon, and projects are underway concerning the paleontology of the Big Cut Locality, the first fossil jaguar from Louisiana, and a multi-authored paper describing the first Cretaceous mammal from Antarctica. New theses based on the Museum collections are being pursued at the Master's level concerning the vertebrate paleontology of the Granger Locality in the Ellensburg Formation of Washington and the size distribution of North American mastodons, *Mammut americanum.*

Additionally, we can include students in our research and exhibits. The museum is set to open a new fossil exhibit, *Prehistoric Louisiana: A Journey through Ice Age Acadiana*". A lot of time, effort, and support has gone into this exhibit. First, the students in Dr. Hargrave's GEOL 422 Museum Methods class have been working hard on developing the overall idea of the new fossil exhibit. They received hands-on experiences prepping fossil casts for display, putting together skeletons, and even writing the text you see on the signage.

The Lafayette Science Museum relies on the support of members, donors, corporate sponsors and partners, and volunteers to sustain our mission to provide informative and interactive experiences in STEM fields to the community, K-12 students, and University students, provide innovative research opportunities, and preserve current and future museum collections for use in exhibits, classrooms, and scientific research. Your donation helps to support our educational mission and outreach efforts as well as the creation of new exhibits. Thank you for your generosity and support of science education. You can support the museum by donating your time, purchasing an annual museum membership, or monetary donation.

Please consider making a donation of any size to the museum. You can find the Museum link here:

https://www.givecampus.com/campaigns/38207/donations/new

UNIVERSITY OF LOUISIANA AT LAFAYETTE SCIENCE MUSEUM

A UNIVERSITY AND LCG PARTNERSHIP

Dr. James E. Martin – Curator Vertebrate Paleontology

A paper stemming from our Antarctic research was published concerning a new bird from the late Cretaceous of the Antarctic Peninsula (Cordes-Person, A, Carolina Acosta Hospitaleche, Judd Case, and James Martin. 2019. "An enigmatic bird from the lower Maastrichtian of Vega Island, Antarctica," *Cretaceous Research*, 108:1-10. https://doi.org/10.1016/j.cretres.2019.104314). Paleontological field work continued with excursions to the Paisley Fish Locality, Fossil Lake, the Fort Rock localities in OR, the Granger Clay Pit site, WA, and Richmond Hill, SD. The specimens from the first site resulted in a Master's thesis by Andrew Whisnet and some from the second in a Master's thesis by Josh Hardt. The Museum activities were rolling, with a new display, Natural Born Killers, high-lighting skeletons and skulls of meat-eating dinosaurs, curation of the specimens collected during our field expeditions, and a larger paleontological repository being constructed on the third floor, thanks to the efforts of the former Lafayette Science Museum Director, Kevin Krantz, and our solid corps of volunteers. We were finally ready to apply for Museum Accreditation, having finances, staff, and facilities in order.

Everything was clipping along when Dr. Martin contracted Covid in March 2020, long before vaccines. His doctors in Louisiana worked hard but finally gave up, and after losing 35 pounds and becoming weaker daily, a private jet was chartered to the Mayo Clinic in Rochester, MN. Six months later, he was still kicking, but the disease had infected much of his body, particularly the heart. He continues his fight, including yearly month-long stays in Rochester.

Even so, he continues overseeing the large volunteer corps, preparation of fossil specimens, display planning and execution, curation of specimens, public outreach, public tours, and paleontological and geological research. In the latter regard, while convalescing in 2021, he wrote the first of two papers concerning a unique paleontological site in northern Oregon, the Big Cut Locality. The name was based on two huge intersecting trenches that were excavated in preliminary studies for a nuclear power plant along the Columbia River. The power plant never materialized, but numerous important fossil specimens including a complete horse skeleton, a saber-tooth cat skull, beaver skeleton and isolated bones of fish, amphibians, birds, foxes, rabbits, rodents, horses, rhinos, camels, peccaries, and three-horned "deer" were discovered in the trench walls. The 2021 paper (Martin, James E. 2021. "The stratigraphy of the Big Cut Locality, Gilliam County, northern Oregon," *Proceedings of the South Dakota Academy of Science*, 100:93-105) concerns the lithostratigraphy of the Big Cut and its relationship to regional stratigraphic sequences. The second paper concerns the description of the vertebrate fossil assemblage and is nearing completion.

The Museum also acquired a huge mammoth replica from our friends Chris and Lisa Madsen at DinoLab in Salt Lake City (**see photo**). However, some assembly was required—well maybe everything was required.

Erecting the mammoth skeleton at the Museum.

With the help of our fabulous volunteers and students, what started as a jumble of white isolated bones ended up as a beautiful mounted mammoth skeleton in the vestibule of the Museum, awaiting our next exhibit plan.

During the 2021 field season, Dr. Martin felt good enough to take the volunteer corps back to the Graves/Potter Locality, a late Ice Age site in northern Nebraska where we collected many significant specimens, although some volunteers complained about the loose white sand that had black bones! We also revisited the Pliocene Richmond Hill site, where we are finding giant camel bones among many other critters. From there, Dr. Martin headed back to the Mayo Clinic for another month of treatments. Upon return to Louisiana, Dr. Martin joined Dr. Hargrave and students at the Carrier Mastodon Locality where Dr. Hargrave and graduate student, Hannah Hawkins, found the carnassial of a giant Pleistocene jaguar, a 1st for Louisiana, and a paper concerning the cat is approaching submittal.

In 2022, an important publication led by Dr. Martin titled, "The earliest known North American bovid, Neotragocerus," appeared in the *Journal of Vertebrate Paleontology*, the flagship journal of the Society of Vertebrate Paleontology. The contribution concerned a cache of small ungulate specimens that were discovered while we excavated the late Miocene giant camel skeletons in Oregon during 2015-16. These specimens represent the earliest North American occurrence of the bovids (e.g. goats, sheep, bison, and cattle) and indicated that the first bovids in the New World were immigrants of Old World antelopes (e.g. gazelles, impalas, duikers, etc.). Not surprisingly, the Oregon antelope is relatively primitive compared to the majority of living antelopes of the Old World and is most closely related to the four-horned antelope and nilgai (blue antelope) of India, the most primitive living antelopes. The horns of our specimens are over the eyes and curve posteriorly, most similar to those of the goats, and this creature appears to represent a morphotype from which the goats were derived. The paper was well-received and generated news releases and public presentations, including a display of the specimens at the Lafayette Science Museum.

Field site where new skeleton of the small bovid, Neotragoceras, was found by Hannah. Right to left—Hannah Hawkings, James Martin, Matthew Harnish, and Jennifer Hargrave.

Dr. Hargrave and Dr. Martin led a field excursion back to the Miocene Fort Rock localities and the Pleistocene Fossil Lake area. We found many fossil specimens of salmon, birds (including rare, fossilized beaks and cranium), rabbits, rodents (several skeletons), horses, and giant camel elements. While revisiting a site where the small bovid bones were previously found, Hannah Hawkins found another horn core, and upon investigation, we found associated jaws and some skeletal elements, making the discovery the first partial skeleton of *Neotragocerus*. The paper was published two months prior to this discovery making this skeleton the focus of a separate contribution.

Students and volunteers brave the cold to collect Pliocene fossil fish at the Paisley Fish Locality, Oregon.

Subsurface Mapping Adjunct

WR (Bill) Finley

News from the Front Lines – How I'm learning to put Geology back into the interpretation process.

During nine (9) years teaching students to map subsurface 3D structural and stratigraphic features I realized our biases (and the data) are keeping us from fully and accurately understanding the Geologic Templates (Models) our resulting interpretations are supposed to emulate.

After fifty (50) years of mechanically interpreting random data points hoping to attain that goal, it took explaining the process to the uninformed [**If you can't explain it simply, you don't understand it well enough. – Einstein**] to fully appreciate how data integration with geoscience experience builds geologic interpretation accuracy.

Transitioning from paper (mechanical tools) to computer (mathematically mechanical tool) means learning how to use a new tool to do the same thing faster, but we failed to upgrade the interpretation process that will improve accuracy. The new tool's capabilities provide the geoscientist with quick mechanical data interpretation analysis methodologies. These methodologies (such as cross sections) were infrequently utilized in the paper world because of time constraints.

The tool (too frequently assigned the role of interpreter) is not a geoscientist. This tool is how the geoscientist analyses the data to understand the geology thus improving the accuracy of the interpretation.

Tools operated by experienced geoscientist interpreters maximize accuracy to minimize risk.

I didn't say it was your fault, I said I was blaming you.

Which begs the question (scientifically?).

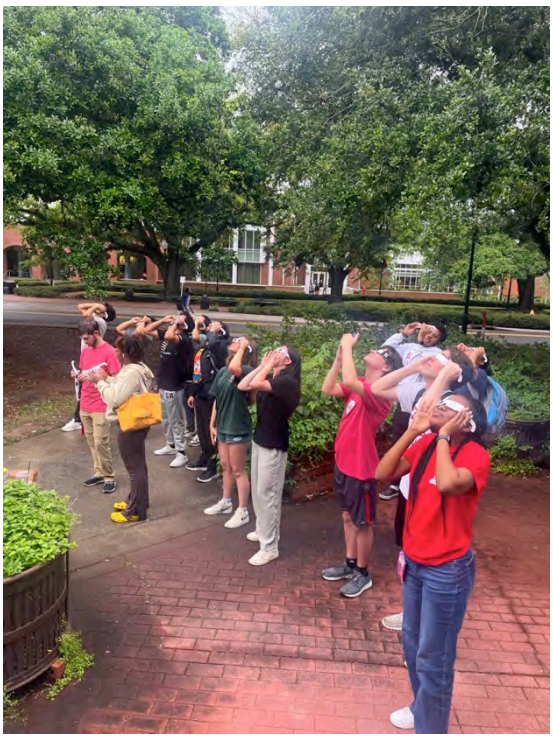
What if there were no hypothetical questions?

UL Geosciences Society

The UL Geosciences Society (ULGS) embarked on its first official trip on Saturday, March 16th. A caravan led by a packed school van made its way to the Houston Museum of Natural Science. Funded in large part by the society, 19 students of various academic backgrounds enjoyed the Cockrell Butterfly Center and outstanding geologic and ecologic exhibits of the world renowned museum.

The trip was just one of the new society's many successes. Through bake sale fundraising, students not only enjoyed a trip to Houston, but also raised enough to throw a Rock'n'Bowl Halloween party and end of year crawfish boil. Biweekly meetings kept students in the loop about seminars, LGS meetings, and other professional development opportunities. The society also hosted its own resume workshop, resulting in 15 students getting feedback and advice from 3 industry advisors. Apart from professional development and social events, ULGS also organized 3 eclipse viewings across Texas, Arkansas, and Louisiana. Over 55 students/faculty were able to safely observe the historical eclipses thanks to the provided glasses.

ULGS looks forward to another year of fostering student connections with the industry and with each other. We would also like to thank the department for their continuous support - this year would not have been possible without our sponsors and administrative advocates.



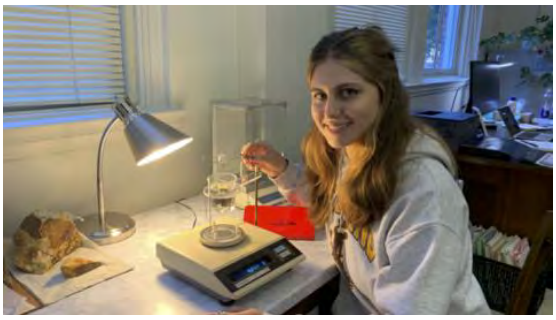
The University of Louisiana at Lafayette Geosciences Society (ULGS, @ulgeosciencesociety) on a trip to the Houston Museum of Natural Science (left) and watching the April 8, 2024, solar eclipse in front of Hamilton Hall (right).

2023-2024 in Pictures

Student Honors and Awards

- **Bipin Bastakoti** (thesis advisor, **Dr. Poudel**), **Holly Heafner** (thesis advisor, **Dr. Paltseva**), **Tyrell Lassair** (thesis advisor, **Dr. Paltseva**), **Mahpara Mashiyat** (thesis advisor, **Dr. Villa**), and **Precious Batubo** (thesis advisor, **Dr. Morra**) were selected for $2,000 awards for their research on Sustainable Development. Only 22 out of 93 proposals across the University were awarded.
- **Chisom Emeghiebo** (thesis advisor, **Dr. Liu**) won second place at the 2024 Louisiana Remote Sensing & GIS Workshop.
- **Bibi Aseeya Mohamed** (thesis advisor, **Dr. Oppo**) placed first in the University's Three-Minute Thesis Competition. For this she won $600 and an all-expenses paid trip to represent UL Lafayette in the regional competition.
- **Bárbara Almeida** (thesis advisor, **Dr. Schubert**) was the Outstanding Thesis Winner for UL Lafayette in 2023, and the university's nominee for the Conference of Southern Graduate Schools Master's Thesis Award.
- **Danielle Noto** (thesis advisor, **Dr. Schubert**) won 1st place at the 2023 Lafayette Geological Society Poster Competition.
- **Peyton Dardeau**, **Abigail Watson**, **Margaret Dittman**, and **Savana Anderson** won 1st place in the Imperial Barrel Award - North America Region in Spring 2023. The team was advised by **Dr. Oppo** (faculty advisor), and **Mary Broussard** and **Brian Brennan** (industry advisors).
- **Haley Benoit (**research advisor, **Dr. Ferré**) won one of two prestigious Leaf Undergraduate Research - Evergreen Awards for her project titled, "Towards new phosphate geothermometer using dahllite concretions of the Thermopolis Shale, Wyoming using multi-channel spectroscopy."

Peyton Dardeau, Abigail Watson, Margaret Dittman, and Savana Anderson won 1st place in the Imperial Barrel Award – North America Region.



Haley Benoit won the Evergreen Award for her research developing a new geothermometer.

Bibi Aseeya Mohamed placed first in the University's Three-Minute Thesis Competition.

Geology Scholarship Recipients

Bill Paine/LGS Scholarship
Grace Jones
Rachel Kelk
Victoria Sanchez
David Starkovich

Eberhart E. Leschin Scholarship
Cole Gies

Joe Battle/LGS Memorial Geology Scholarship
Ross Bourque
Caitlyn Mullis
Victoria Sanchez

Chevron Gulf Oil Foundation Geology Scholarship
Cole Gies

Nolan Badeaux Scholarship
Cade Holbach
Scott Leedy

Tim Dore Geology Scholarship
Matthew Fontenot
Rachel Kelk
Caitlyn Mullis

Marvin and Hazel Harvey Morris Scholarship
Ross Bourque

Bill & Heather Finely Geosciences Scholarship
Peyton Dardeau

Paul M. Toce Scholarship
Brandy McJimsey
Masie Minnick
Neva Powers

Hugh Allen Bernard Memorial Geology Scholarship
Cade Halbach

Pogo Producing C. Scholarship
David Starkovich

Walter James Rudick Scholarship in Earth Sciences
Matthew Fontenot

McCasland Foundation/Mack Energy Co Scholarship in Petroleum Geology
Bibi Aseeya Mohamed

Environmental Sciences Scholarship Recipients

Dr. Jorge Gonzales-Dean Joel Fletcher Memorial
Emily Phillips-Deshotels
Caleb Fumuso
Elizabeth Prothro

Tommy Sanders Scholarship
Caleb Aucoin
Lawren Fabacher
Cole Johnson

Charles Joseph Miller & Vivian Melancon Miller Scholarship
Nathaniel Caldwell
Enrico Calpestri
Emily Phillips-Deshotels
Joseph Kolb
Francis O'Brien
Spencer Vitello
Shannon Weiss

South Louisiana Mid-Winter Fair Scholarship
Brian Beck
Chloe Boone
Tanner LaGrange
Alayna Martin
Hayden Smith

Mary Sandoz Brown Scholarship
Amelia Day
Bree Landry

Overton Cade Scholarship
Brian Beck
Spencer Vitello

Louisiana Garden Club/The Kevin Russo Scholarship
Chloe Holt

Dr. S.L. Solmosy & Mrs. G.A. Solymosy Scholarship
Kaitlyn Caminita
Karessa De La Paz
Madeline Moore
Benjamin Mouledous

Farmers Merchants Bank & Trust Co. Scholarship
Caleb Theriot
Kathryn Walker

Charles and Julia Walker Bourque Scholarship
Grace Blanchard

J.C. Higginbotham Scholarship
Bree Landry

ULL Collegiate FFA Chapter Scholarship
Alanna Gaspard

Joel L. Fletcher Scholarship
Kaitlyn Caminita
Karessa De La Paz
Madeline Moore

Degrees Granted in 2023-2024

Bachelor of Science in Geology

Benoit, Haley
Branigan, Jenna
Brown, Myllah
Dardeau, Peyton
Jones, Grace E.
Neva Powers
Owens, Alexander
Pfeffer, Harrison
Starkovich, David
Watson, Karis

Bachelor of Science in Environmental Sciences

Blanchard, Monique
Caminita, Kaitlyn
De La Paz, Karessa
DeSpain, Kenneth
Ethan Trahan
Fears, Ahmad
Guedry, Jenna
Hymel, Benjamin
Kimberly Thompson
Kyles, Caedmom
Marcantel, Mason
Moore, Madeline
Rinaudo, Mia
Romero, Luke
Savoie, Crystallyn
Smith, Ashley
Stoll, Jordan
Trosclair, William

Master of Science in Geology

Arhin, Henry
Ayodele, Ayobami
Brovold, Claire
Davis, Niya
Dilley, Corey
Dittman, Margaret
Hawkins, Hannah
Higdon, Allison
Isa, Cole
Loop, Megan Ann
Magliari, Haley
Matte, David
Mire, Camron
Mohamed, Bibi 'Asseeya'
Noto, Danielle
Reames, Ryan
Watson, Abigail
Young, Michael T.

Master of Science in Environmental Resource Science

Bastakoti, Bipin
Gelal, Ananya
Heafner, Holly
Islam, Sadia
Maier, Eden
Miller, Blair
Niroula, Rabin

Doctor of Philosophy in Earth and Energy Science

Dr. Courtney Poirier Chicola
Dr. Ernest Antwi

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