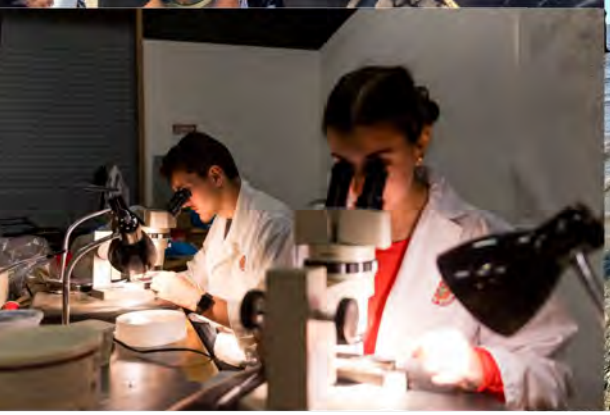



NEWSLETTER MAY, 2025

UNIVERSITY of LOUISIANA LAFAYETTE

Ray P. Authement College of Sciences

School of Geosciences Newsletter

Contents

Greetings from the Director

It's our pleasure to bring you the 2024-2025 newsletter from the School of Geosciences! This year brought new faces to our School. We welcomed 3 new Assistant Professors to the School: Dr. Io Ioannidi, Dr. Heather Kirkpatrick, and Dr. Mark McDonald (see New Faculty highlights), and saw an increase in enrollment for both our Environmental Science and Geology programs.

As you may have seen, the University again earned Carnegie's prestigious R1 designation, which places us in the nation's top tier (∼5 %) of public and private research institutions for very high research spending and doctorate production. What you may not know is that the faculty and students in the School of Geosciences were integral to this achievement through their scholarship and research, some of which you can read about within this year's newsletter. To stay up-to-date throughout the year, I encourage you to follow our social media feeds on Instagram (@ulgeosciences), X (@ULGeosciences), and Facebook (@UL Lafayette School of Geosciences).

The UL Geosciences Society (ULGS) continues to be also active with a camping trip, Geoloween party, Thanksgiving, a crawfish boil and much more! Follow them on Instagram (@ulgeosciencesociety) for more!

We received generous donations to support our faculty and students, including a new gift to support scholarships for students interested in pursing careers in coastal or subsurface geology. These scholarships provide financial support and access to industry data that allows our faculty to better train the next generation of subsurface and coastal geologists in Louisiana. Our first cohort of two undergraduate and two graduate students was awarded this Spring. We also used donated funds to launch our first annual Geosciences Research Symposium, held in the Student Union. This event highlighted the exceptional research ongoing in the School, particularly by our undergraduate and graduate students. We had more than 30 poster presentations that allowed the broader UL Lafayette community to see the work we do in Geosciences (more inside). We look forward to building and expanding these efforts in the coming years.

As noted in last year's newsletter, the Lafayette Science Museum is now under the direction of the College of Sciences with our own Dr. Jennifer Hargrave serving as museum Director. In the past year, Dr. Hargrave has led several initiatives including a new exhibit on local fossils from Acadiana: *Prehistoric Louisiana: A Journey through Ice Age Acadiana* and a public lecture and book signing by Dr. Neil Shubin, a best-selling author of "Your Inner Fish" who spoke about his new book on exploring the polar-regions. The event exceeded all expectations with an overflowing standing room only audience! Sign up for the Lafayette Science Museum newsletter to stay up-to-date on events and be sure to visit in-person to see what is new!

If you live or work in the area, or are returning to the area for a visit, feel free to stop by Hamilton Hall. We'd love to see you and hear about all that you've been up to!

Sincerely,
Brian Schubert
Director

Newsletter Editor

This year's Newsletter is brought to you by Dr. Io Ioannidi, one of the new faculty members of the School of Geosciences. Since she introduces herself in the next chapter (New Faculty), she decided to share here some alligator photos from Cypress Lake, which will make Dr. Kirkpatrick very happy! Bonus: if you can spot all the alligators, you will get a free sticker!

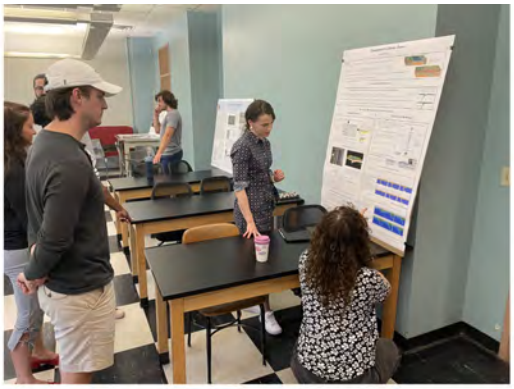
New Faculty

Io Ioannidi

Hi everyone! My name is Io Ioannidi, and I am one of the new Assistant Professors at the School of Geosciences since August 2024. Some days I call myself a geodynamicist, others a rheologist, and then there are days that I feel like a numerical modeller. However, the essence of what I do remains the same: I investigate the dynamics of the systems in the lithosphere using numerical models, which I constrain based on their rheology, i.e. on whether the rocks that comprise them deform by fracturing or by flowing - think of a Snickers bar and the different ways each element deforms!

My academic journey started in Greece, where I earned my BSc and MSc in Geology and Geophysics, respectively. My doctoral studies took me to Berlin and Paris (as well as some pretty cool places for fieldwork and training)! After that, I traveled across the Atlantic twice, once for a postdoctoral position at Iowa State University, and a second time for a postdoctoral position in the land of tulips and bitterballen, before I finally settled (hopefully) at my current home, in Lafayette.

In these first two semesters at UL I have taught Structural Geology, Geotectonics, and Earth Evolution (photos follow), and in the coming semester I will also start supervising MS and Ph.D. students on various projects ranging from subduction zones and triple junctions, to reservoir fracturing and sediment deposition in the Gulf of Mexico. I want to explore the geology of North America and train students to see beyond the rock outcrops and small-scale tectonics and more toward the large-scale processes that were imprinted on rocks during millions of years. I am also very excited to enhance my numerical models with physical models performed in my new analogue laboratory, where common materials, such as sand, rice, silicon, and syrup, will be used as proxies for rocks with varying properties.



Top left: Poster presentation for Geotectonics; Bottom left: Review lecture for Earth Evolution; Right: Happy faces after 3D streamer is successfully deployed, ca. 250 nautical miles east of Auckland, New Zealand.

Heather Kirkpatrick

Hello! My name is Heather Kirkpatrick, and I started as an assistant professor in the School of Geosciences in August 2024. I am a high-temperature geochemist which means I primarily study the chemistry of minerals and rocks that formed above $\sim 500^{\circ}$ C.

With this information, I make inferences about the formation conditions of crust throughout Earth's history. I am originally from Michigan, and I attended University of Michigan for my B.S. (Go Wolverines!). I then spent 6 years at UCLA pursuing my PhD and enjoying the beautiful weather southern California has to offer. While there, I was lucky enough to do field work in Tibet and Western Australia (in addition to California and Nevada). Upon graduating, I spent 2 years as a postdoctoral fellow studying early Earth geochemistry at Harvard University, and was able to travel to South Africa for field work.

Since starting at ULL, I have taught three classes (Introductory Mineralogy, Introductory Petrology, and Landscape Evolution), and I have begun participating in science outreach events. I also continue to collaborate on projects related to mineral and melt inclusions in zircon and other host phases, early Earth geochemistry, and stable isotope geochemistry. Additionally, I attended my first Mardi Gras parade and continue to be amazed by the alligators living on campus.

Top left: Graduate students Peyton Dardeau and Emma Van Houte discuss fossils and rocks during a visit to the School of Geosciences by a local Cub Scout Den; Top right: Undergraduate students Kaylee Brown and Hali Sonnier build crystal structures during Introductory Mineralogy; Bottom left: Undergraduate students Jamie Rendall and Nick Miller use carbonated soda to explain volcanic eruptions to high school students during Science Day; Bottom right: Undergraduate students Nick Miller, Emilie Panigeon, and Kathryn Walker show rocks during Preview Day.

Mark McDonald

After joining the School of Geosciences in August 2024, I have spent the last two semesters working to outfit my laboratory for the research goals of my program, bringing undergraduate students into research, and teaching a few of our soils classes offered in the Environmental Sciences program. It has been a rewarding first year, but sadly I am also saying goodbye. I have accepted a position at the University of Arkansas and will be leaving the department on June 30th. I want to say thank you to all the faculty, staff, and students for making Louisiana feel like home.

While we never got the chance to change the name on the door, we were able to start some exciting soil biogeochemical and microbiology work in Hamilton Hall as the Environmental Soil Microbiology and Biochemistry Laboratory (ESMBL). We procured loads of new equipment (qPCR, hoods, incubators, etc.) to facilitate the work of a few undergraduates who worked on a project to understand the major differences between Cajun Prairie and pasture soils. They conducted a preliminary soil assessment and evaluated microbial population differences that may have come about since the reestablishment of prairies at the Ecology Center. In addition to this active work, my program received a small equipment grant to purchase an incubator specifically designated for undergraduate research use, which further expanded the capabilities of the ESMBL laboratory.

Outside of research, we spent no small amount of effort to reinvigorate the basement space in Hamilton Hall to house our soil science laboratories. As a small bit of self-congratulation, I was awarded the Excellence in Advocacy award from the Agronomy Society of America, Crop Science Society of America, and Soil Science Society of America in December 2024. As part of this award, I travelled to Washington D.C. in February to represent these organizations and speak with representatives about the importance of research funding, especially soil research funding, for our state and region. We had a lot of productive conversations, and it was great to connect with representatives who understand the importance of agricultural research to our state's producers.

Soil sampling 25+ year old Cajun Prairie at the Ecology Center. Pictured are undergraduate students Heather Brown, Simone Szentgyorgyi, Emily Phillips-Deshotels, and Andrew Van Eaton. Picture by Dr. Mark McDonald.

Faculty & Instructor Updates

Jennifer E. Hargrave

I spent much of my time the past academic year teaching a variety of classes, including a mix of general education courses and paleontology courses for our majors. I am enjoying teaching our new paleo courses for our paleontology concentration. I think it's a great addition for the program and the courses give our students unique opportunities. For example, students in my GEOL 422 course, Museum Methods, created the exhibit Prehistoric Louisiana: A Journey through Ice Age Acadiana. They helped develop the materials in the exhibit, including the signage and images. This project is a favorite of mine. In addition to teaching, I do reserve some time for student and personal research. I supervise a small group of graduate students in pursuit of their MS. Ms. Hannah Hawkins recently graduated after completing her thesis "Significance of the Carrier Mastodon Site of Acadia Parish, Church Point, Louisiana, and Descriptions of Mastodon and Bison Fossils". She is currently teaching at SLCC and will be providing teaching support for us very soon. She will be a great addition for us. Chase Sylvester is on track to defend his thesis "Largest Mastodon Recovered in Acadia Parish, Louisiana: Causes and Ecologic Implications of Mastodon Size" later this semester. He has developed several models to explain the unusually large size of our newest mastodon find. He also presented his work at the monthly Science on the Bayou series. I have two more graduate students who are getting started with their theses. Devin Surcouf is working on fossil rodents from Washington State and Cole Philips is examining fossil birds from Fossil Lake, Oregon (one of my favorite topics!). In addition to working with the graduate students, I do have a couple personal research projects in the works. First, a collaborative effort of Louisiana fossils should be out very soon, entitled "The Unique Story of Louisiana's Cretaceous Air-Breathing Sea Monsters, Its Paleocene Mammal Fossil, and the Intervening Boundary Cocktail and Ghost-Maker Megaripples". Additionally, I'm working with my friend and colleague, Dr. James E. Martin, on describing the first fossil jaguar from Acadiana. It's been a great year with many accomplishments. The academic year ended with exciting news, as I was selected to receive the 2023-2024 Ray P. Authement College of Sciences Outstanding Undergraduate Research Mentor Award. What a great way to end the year!

Cade Halbach and Karessa de la Paz looking at fossils under the microscope as part of the coursework in GEOL 422.

Museum volunteer, Michael McBane, Jennifer Hargrave, and graduate student Chase Sylvester fossil hunting in Acadia Parish.

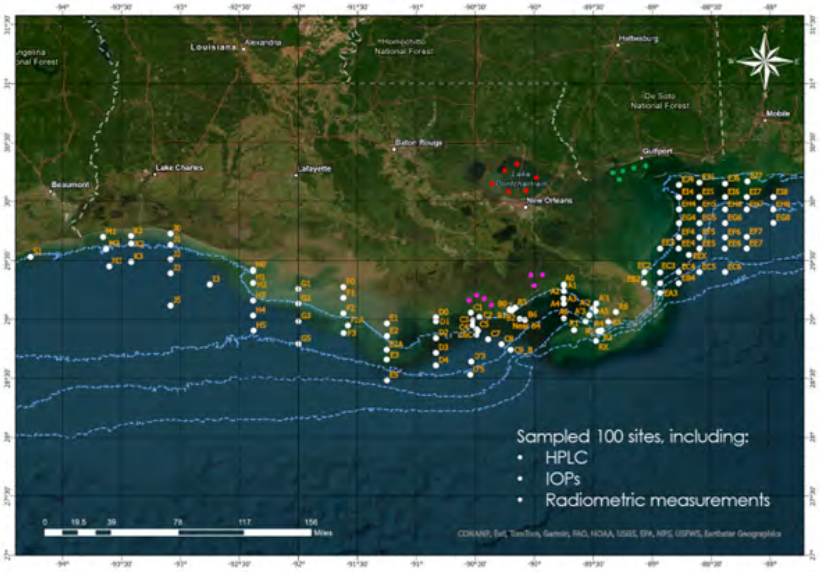
Bingqinq Liu

Dr. Liu joined the Environmental Sciences faculty team of the School of Geosciences August 2023. Dr. Liu describes herself as a satellite oceanographer who seeks to better understand and constrain coastal carbon dynamics, aquatic ecosystems biodiversity, coastal water quality and their responses to climatic changes, extreme events, and anthropogenic stressors. Her research entails the development of satellite remote sensing algorithms based on marine optical theory and field observations, and the integration of remote sensing data and other data products such as outputs from computer models to study ocean processes, 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 second year at UL, she successfully secured and executed several new grants, including, NASA's PACE grant, the Coastal Protection and Restoration Authority (CPRA) Coastal Science Assistantship and NSF's AI for Geosciences grant.

This year, she welcomed three Ph.D. students—Jiang Li, Chisom O Emeghiebo, and Coy A LeBlanc—as well as one master's student, Crystallyn M Savoie, into her HyperCoast Lab. Together, they are advancing research in remote sensing of coastal environments. With the collective efforts of her team, they conducted extensive water quality monitoring last year, as represented in the map on the left.



Fieldwork conducted in the northern Gulf of Mexico in Fall 2024.

Dr. Liu's lab members.

Davide Oppo

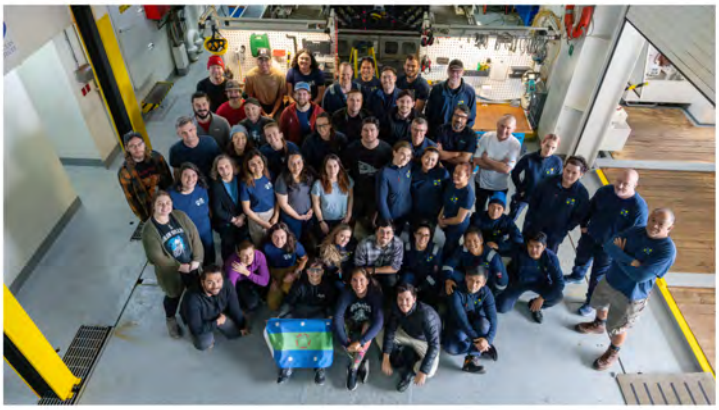
Over the past year, the Sedimentary Basins Research Group has experienced a dynamic period of exploration and discovery, marking significant advances in our understanding of methane seepage and sedimentary processes along continental margins. Our research into methane seeps has not only deepened scientific insight into fluid migration and gas hydrate dynamics in the Gulf of Mexico but also highlighted the innovative use of state-of-the-art equipment and collaborations with industry and funding agencies. Backed by grants from the LA Board of Regents and the American Chemical Society, and further supported by TGS, WesternGeco, and an additional grant from the National Science Foundation, our team has pushed the boundaries of marine geoscience. Field campaigns involving research cruises, sediment and water sampling, seafloor mapping, and deployments of remotely operated underwater vehicles have emphasized our commitment to comprehensive data collection in the challenging offshore environment.

Notable field work included an expedition aboard the Schmidt Ocean Institute's R/V Falkor(too) during a month-long research cruise along the Chilean coast, where our team deployed remotely operated vehicles and coring devices to study diverse methane seepage sites. This international collaboration exemplifies the global reach and collaborative spirit of our research endeavors.

Our scholarly output has been equally impressive, with a series of influential publications that have broadened the scientific community's understanding of methane seep activities and deep-water sediment dispersal. Research papers have delved into the trace element signatures in sedimentary pyrite as indicators of methane seepage, explored the controls on fluid discharge in cold seep-hydrate systems through innovative 4D seismic monitoring, and investigated early extensional salt tectonics and their effects on sediment dispersal. Additional work has revealed how tungsten enrichment in sediments under methane seepage conditions can serve as a proxy for reconstructing past seepage events, while a pioneering study applied deep neural network techniques to reconstruct paleotsunami events from sedimentary deposits. These publications featured contributions of leading international scientists.

The energy and creativity of our team's emerging scholars have also been on full display. Gracie Babineaux, a National Science Foundation Graduate Fellow, has been making significant strides in deciphering the influence of methane seepage on foraminifera and its geochemical imprints. Gracie has been participating in the American Geophysical Union Fall Meeting since 2021, and last year, she had her first experience as a session convener. Meanwhile, Ferdinando Cilenti has been innovatively applying 4D seismic monitoring to unravel the complexities of gas hydrate and cold seep systems in the Gulf of Mexico. His work has been published in EPSL and yielded critical insights into subsurface fluid migration and seafloor emission dynamics, reinforcing the group's reputation for integrating cutting-edge technology with classic geological inquiry.

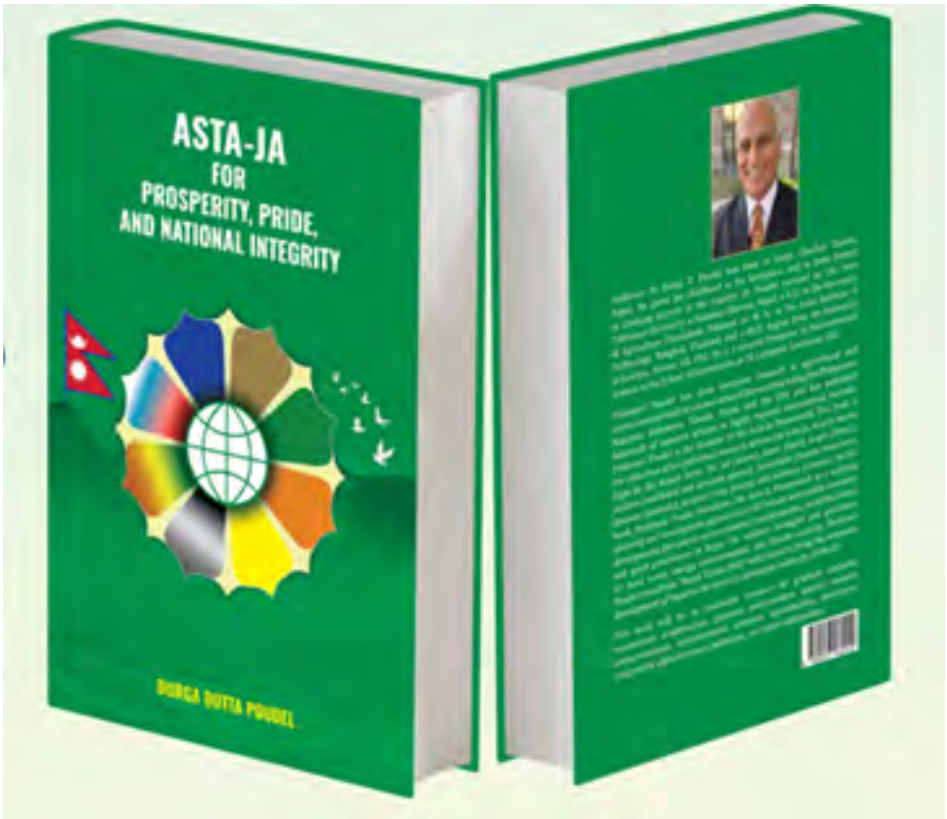
Parallel to these methane seep projects, our investigations into sedimentary processes along continental margins have increased with new projects supported by BP. Master's candidates Peyton Dardeau and David Starkovich are currently evaluating sediment instability in the Gulf of Mexico using advanced 3D seismic data. Their research focuses on deciphering the characteristics and frequency of mass transport events at the base of the Sigsbee escarpment, promising to refine our understanding of sediment dynamics in this complex and ever-changing environment.




DOLLY

Durga D. Poudel

Dr. Durga D. Poudel published a book entitled "Asta-Ja for Prosperity, Pride, and National Integrity". This book is a collection of his thirteen published research articles from 2008-2022. It presents a theoretically grounded pioneering framework, the Asta-Ja Framework, for sustainable conservation, development, and utilization of natural and human resources for fast-paced socio-economic transformation, sustainable economic development, and environmental quality in Nepal. It presents practical guidelines and strategies for food, water, energy, environmental and climate security. This book also presents Nepal Vision 2040 which aims to develop Nepal to the level of developed nations by 2040. Asta-Ja meaning eight Ja in Nepali letter, Jal (water), Jamin (land), Jungle (forest), Jadibuti (medicinal and aromatic plants), Janshakti (manpower), Janawar (animal), Jarajuri (crop plants) and Jalabayu (climate) representing the four subsystems of the Planet Earth, hydrosphere (Jal), Lithosphere (Jamin), atmosphere (Jalabayu), and biosphere (Jungle, Jadibuti, Janashakti, Janawar, and Jarajuri). The Asta-Ja Framework is a unifying planning and development approach for self-reliant sustainable economic development, fast-paced socio-economic transformation, social inclusion, and good governance in Nepal. This book is available on Amazon, and Barnes & Noble. Professor Poudel has done extensive research in agricultural and environmental fields in various areas of the world including the Philippines, Malaysia, Indonesia, Taiwan, Nepal, and the USA, and has published dozens of research articles in highly reputed international journals. This book captures his tremendous experience in the field. He is the Founder of the Asta-Ja Framework. This book will be an invaluable resource for graduate students, researchers, academicians, planners, policymakers, natural resource conservationists, environmental scientists, agriculturists, developers, economists, administrators, politicians, and other stakeholders.



Carl Richter

Carl Richter continued his research on the marine geology and geophysics of deep-sea drill cores collected from the Iberian Margin and the Indian Ocean. Additionally, he initiated new projects with his graduate students, Joyeeta Chakma and Victoria Sanchez, focusing on the environmental magnetism of urban soils in the Lake Charles and New Orleans areas. Both students have collected and analyzed a substantial dataset of field data and collected discrete samples which put them on track to graduate this spring. Joyeeta was awarded a prestigious NSF-funded fellowship to visit the Institute for Rock Magnetism at the University of Minnesota this winter, where she conducted in-depth analyses for a comprehensive rock magnetic characterization of her samples. Carl and his co-authors published a paper in the Journal of Geophysical Research: Solid Earth, one of the premier geophysical journals, presenting new findings on geomagnetic field strength variations during the Cretaceous Normal Superchron from deep-sea cores in the Indian Ocean. This article was recognized as an Editor's Highlight in EOS, an honor awarded to only 2% of eligible papers.

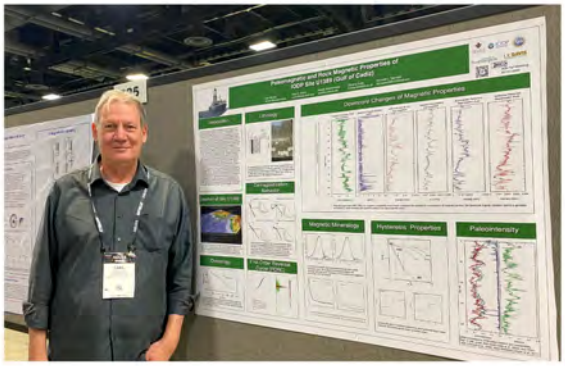
Following the departure of fellow paleomagnetist Eric Ferré to his new position as Department Head at New Mexico State University, Carl and his students have taken over the vacated research space and are actively working in the paleomagnetics lab, a well-equipped facility featuring a shielded room, a spinner magnetometer, a vibrating sample magnetometer, and a comprehensive set of instruments for paleomagnetic and rock magnetic investigations – also available for visitors.

Before joining UL Lafayette, Carl spent a decade as a research scientist and project manager at the Ocean Drilling Program at Texas A&M University, overseeing the successful completion of scientific marine coring expeditions. The program's drillship, the JOIDES Resolution, operated for 40 years as part of a globally funded research collaboration involving multiple member countries and consortia, led by the National Science Foundation (NSF).

To the disappointment of the international scientific community, the NSF decided last year to discontinue the highly successful, well-performing, and cost-efficient International Ocean Discovery Program (IODP) and demobilize the JOIDES Resolution after her final port call in Amsterdam in August 2024. Carl had the opportunity to visit and tour the ship one last time in Amsterdam, reconnecting with long-time colleagues and friends for a farewell gathering.

Looking ahead, Carl will be taking a sabbatical during the next academic year after 23 years of research, teaching, and service at the University. This time will allow him to focus on advancing several ongoing research projects toward publication and exploring new ideas for future research endeavors.

Graduate student Joyeeta Chakma during field work in Lake Charles (May 2024).



Top left: Carl presenting a research poster at the AGU meeting in Washington, D.C. (December 2024); Bottom left: The JOIDES Resolution, drill ship of the International Ocean Discovery Program, during her last port call in Amsterdam before demobilization (August 2024); Right: Carl in the lab stack aboard the JOIDES Resolution, standing in front of the superconducting rock magnetometer, the magnetostratigraphic "time machine".

Brian Schubert

This year marked a transition for the lab, as we welcomed new students, Izamary Lara and Clinton Vincent to the lab, as well as Bill Finley, who many of you know through his 50 years of geoscientific work in South Louisiana or from taking one of his subsurface courses here at UL Lafayette. Bill is now serving a dual role as adjunct faculty and student – he enrolled in the interdisciplinary Earth and Energy Sciences PhD Program this past fall. Perhaps this is a good time to say that if you are interested in pursing your education further through any of our graduate programs, please reach out!

We also welcomed Dr. Hope Jahren to our team. Dr. Jahren was my post-doc mentor and long-time colleague, and now joins us as an Adjunct Professor in the School of Geosciences. Her accolades are a mile long, but include Elected Member of The Norwegian Academy of Science and Letters, Fellow of both the American Geophysical Union and Geological Society of America, and winner of the James H. Shea Award from the National Association of Geoscience Teachers, among many other awards and honors. She's also an accomplished author of popular books, including Lab Girl, which was a New York Times Best Seller; The Story of More, an account of the last 50 years of human impact on our planet; and Adventures of Mary Jane, a new fiction book that tells the story of Mary Jane, a character from Mark Twain's Adventures of Huckleberry Finn, as she adventures down the Mississippi River in the 1840's. Dr. Jahren has visited us several times over the years, most recently as a guest lecturer for GEOL 105, but we are now extremely lucky to have Dr. Jahren join our faculty in an official capacity!

Another year, and I still can't believe how fortunate we are to have Dr. Yingfeng Xu to help train students and keep the lab running smoothly. She's been working closely with Izamary and Clinton, but also other students and visitors to the lab. None of our work could happen without her, particularly given my added administrative responsibilities. We have also added several new collaborative projects with colleagues around the world (University of Oslo, Winthrop University, and University of Southern California, among others), who know the quality data that our lab produces due to Yingfeng's dedication.

We published several papers this year. For one of these, myself with three past and current lab members (Collin Moore, MS 2017; Bill Lukens, postdoc 2018-2019; and Hope Jahren, present) and other colleagues applied new techniques and analyses we developed over the last decade to samples that I collected as an Assistant Professor during my very first year at UL Lafayette! You can read a summary of this work here, which I suppose has literally been years in the making. Even longer in the making was this study that I co-authored with Dr. Jahren that settled a 40-year debate among geoscientists.

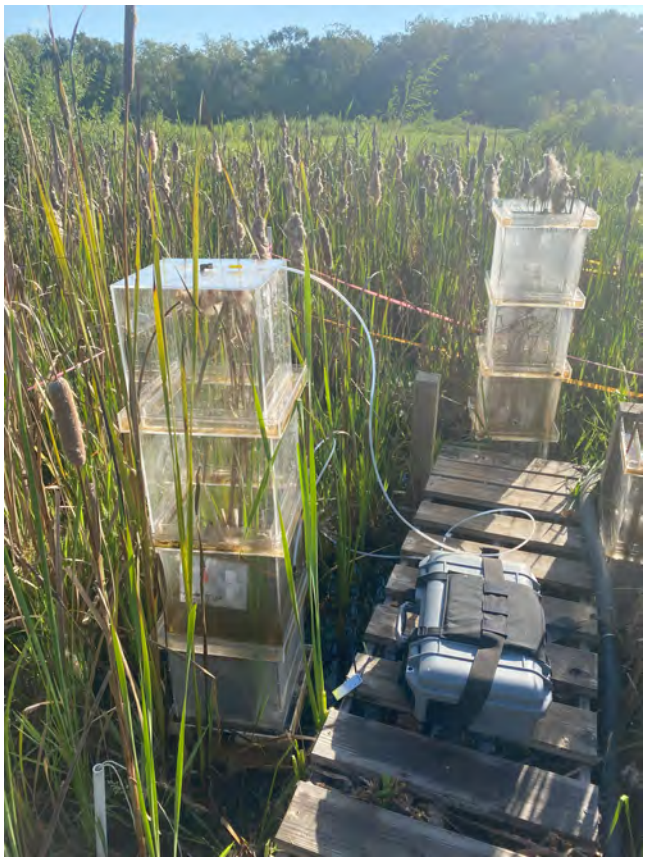
Alex is now 9 and Noah started Middle School this fall. I can't believe how fast they grow! Alex is enjoying Percy Jackson and flag football and Noah made his School's baseball team. Both LOVED the 10 inches of snow we got this January.

Jorge Villa

Prof. Jorge Villa and his team collaborated in two high-impact studies to advance our understanding of methane production and emissions from wetlands and how we represent these processes in Earth Systems Modeling. Methane is a potent greenhouse gas thought to be responsible for about half of the total global warming effect since preindustrial levels. Despite wetlands representing nearly one-third of global emissions, we still have many questions about how these ecosystems will respond to climate change.

The first study, published in Nature Communications (impact factor: 14.7) was led by a microbiologist team based at Colorado State University, with whom Dr. Villa has worked since 2018. This work entitled "Metabolic interactions underpinning high methane fluxes across terrestrial freshwater wetlands" unraveled that high methane-emitting wetlands exhibit distinct microbial community structures and metabolic interactions that drive methane fluxes. Among the core eight methane cycling genera identified, one is the Methanoregula, which seems to play a central role as a hub methanogen in microbial networks and is a strong predictor of methane flux. The study also highlights that methylotrophic methanogenesis, previously underappreciated, is an important pathway contributing to methane production in these ecosystems. These findings present a clearer picture of the specific organisms involved in methane production in wetlands, opening a path for more detailed model representations and hopefully more accurate predictions of methane emissions in climate models.

The other study, led by researchers at Ohio State University, showed how a new, improved version of the land surface representation in E3SM, the Energy Exascale Earth System Model, was published in JAMES (Journal of Advances in Modeling Earth Systems, impact factor: 11.4). E3SM is a state-of-the-art model development and simulation project that investigates energy-relevant science using code optimized for DOE's advanced computers. This model integrates models of the atmosphere, land, river, ocean, sea ice, and land ice to simulate and project climate changes over decades to centuries. E3SM is designed to address energy-related science challenges, such as water availability, extreme temperatures, energy resource potentials, and sea-level rise. Dr. Villa's work generated critical data that was used to parameterize a newly created version of the land component of ELM that includes wetland-specific processes driven by fluctuations in water levels. This work, which started in 2020, involved two PhD students of the Earth and Energy Sciences PhD students and more than ten undergraduate research interns trained in greenhouse gas flux measurements and data analyses.



Chamber for greenhouse gas flux measurements in wetlands.

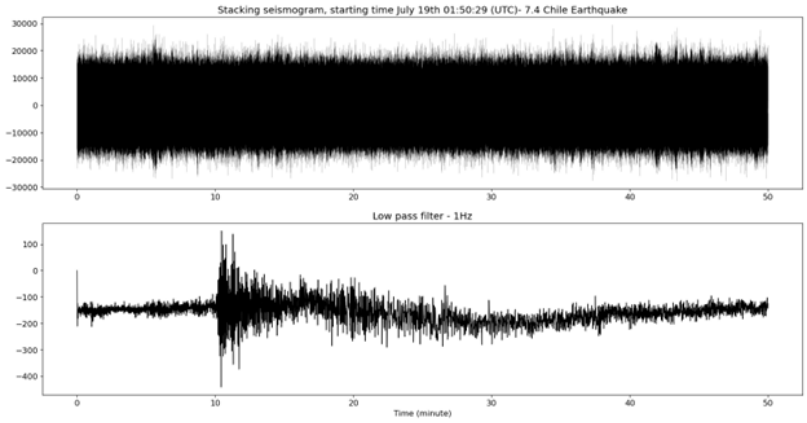
Rui Zhang

In the summer of 2024, we conducted a Distributed Acoustic Sensing (DAS) survey from June 26 to July 25 using an on-campus fiber-optic cable running from Abdalla Hall to Johnston Street (Figure 1b), covering a total length of approximately 1.1 km. The survey utilized iDAS equipment from Silixa LLC, with a temporal sampling rate of 1 ms and a spatial sampling rate of 1 m.

Over the 30-day period, we recorded approximately 10 terabits of data, which has been analyzed to detect various events, including traffic patterns, lightning strikes and earthquake. Figure 2 highlights an earthquake event captured by our fiber-optic cable.

(a) (b) (c)

(a) shows Instructor from Sillixa LLC give lectures on the iDAS to our students with our staff running the fiber cable from the next door mechanic room through the ceiling; (b) shows the map the fiber cable used; (c) shows the iDAS equipment where the fiber cable plug in.



Upper panel shows the stacking trace with length of 50 minutes starting at July 19th 01:50:29 (UTC). Lower panel shows the data low-pass filter at 1 Hz, showing the seismogram of magnitude 7.4 earthquake in Chile.

Gary Kinsland

I am still here and am actively involved in research. Last year I supplied a link to a paper with graduate students Kaare Egedahl, Martell Albert Strong, and Robert Ivy which was published in 2021. I also reported that Rui Zhang and I were collaborating on a project to image tsunami megaripples from the Chicxulub Impact, the subject of the 2021 paper, over an area more than ten times the area of the 2021 paper. It has now been published: https://doi.org/10.1016/j.margeo.2024.107466. I am sorry that you cannot see the images at this link (as I suppose you were not able to see them with last year's link); however, you can see some of the images from the most recent paper on the UL Geosciences home page which Dr. Oppo maintains. The main images from the paper are there and support the conclusion that the whole of the northern GoM(A) paleo shelf and slope are covered with megaripples.

Now I am moving on to complete the study of the conventional core which we have, and which crosses the K/Pg. Several students have already contributed to this study and produced theses: Forrest Frederick, Eric Muchiri and Kody Shellhouse. Now I am collaborating with a paleontologist for micro paleo studies and with an individual who has a special technique to sample, under vacuum, the gases within the core. Rock samples have been extracted from the core, with my help, by each of the specialists. We hope to learn about the composition of the atmosphere surrounding the K/Pg and about the changes in live recorded in the core.

Photo credit: Carl Richter.

UL Lafayette Science Museum

Jennifer E. Hargrave – Director

The museum wrapped up another busy year with lots of outreach and informal STEM education. The newest exhibit, *Prehistoric Louisiana: A Journey through Ice Age Acadiana*, was completed and received favorable reviews. It is the only exhibit of its kind to display Acadiana fossils. The exhibit also includes a fossil dig pit and bone puzzles for visitors.

The museum continued to host its monthly STEM Saturdays program (the second Saturday of each month) in which we provide additional hands-on learning opportunities for museum guests, as well as our bi-monthly Documentary Date Nights. This year we expanded the date nights to include trivia nights. They were well received and we plan to do more.

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 donating 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

Part of museum display showing ambush hunting techniques of sabre-tooth cats and a bison. Photo from Paul Kieu.

Entrance to the new display highlighting the large megafauna from the Acadiana Pleistocene. Photo from Paul Kieu.

Get ready for an adventure—visitors can dive into the action and uncover fossils in our inspiring dig pit! Photo from Paul Kieu.

Inaugural trivia night winners with their trophy.

James E. Martin
Research Professor and Curator of Paleontology

As you may recall, Dr. Martin has been struggling with Long-Covid since contracting the disease early in 2020. Much of 2024 involved health issues, including being selected by the Mayo Clinic for their Long-Covid research and education program. Even with all the time expended with the medical tribulations, he was able to fit in some research, curation, and advising.

He spent the first portion of 2024 summarizing the geology of the fossil beds on Vega Island for a paper concerning the first Cretaceous mammals from Antarctica. Four field seasons were spent on the southernmost continent in an attempt to prove that marsupial mammals migrated from North America through South America and across Antarctica to arrive in Australia where they were isolated for most of the Cenozoic. Although we did not find the marsupial, we discovered a hadrosaurine dinosaur that had taken the same route. Over the years, we have been picking samples under microscopes hoping to find a marsupial tooth. Still no luck there, but a very unusual tooth was found that appears related to the primitive monotremes, egg-laying mammals such as the platypus and spiny echidna of Australia. Another tooth represents the extinct mammals, the gondwanatheres, primitive rodent-like creatures from the southern continents.

During the late spring, Jim was engaged with the entire UL Museum staff, students, and volunteers as well as Chris Madsen from Salt Lake City in preparing a major display concerning the Ice Age mammals from Acadiana. We focused on three major sites: 1) Jefferson Island where our friends, the Mike Richards family, aided us greatly in many ways, especially for the loan of fantastic mastodon, horse, and tapir fossils for display; 2) Avery Island, home of Tabasco hot sauce, which also produced fine Ice Age fossils from mammoths, to bison, and big cats. We were fortunate to include some of their fossils from LSU into the display along with some from the archives held at Avery Island thanks to Dr. Shane Bernard; and 3) specimens from the Carrier Mastodon site, a site from which Quentin Carrier found huge mastodon teeth, horse, bison, and a partial skeleton of the first fossil jaguar from Louisiana. Dr. Jennifer Hargrave and Dr. Martin are co-authoring a research paper and Dr. Hargrave made a presentation at the Society of Vertebrate Paleontology meeting in Minneapolis concerning the giant jaguar. In addition to fossils from these sites, we fabricated a giant bison being attacked by two saber-toothed cats and replicated skeletons of a giant ground sloth, mastodon, and mammoth. Emma Grekul's artistic skill resulted in a wall mural of two mastodons with a horse being pursued by a giant jaguar that represents the Carrier Mastodon site during the Ice Age. Come visit!!

Dr. Martin collecting vertebrate fossils at the site which produced the first Cretaceous mammals from Antarctica.

Geology Museum volunteers Cathy Bishop, Susie Hughes, Mary Landry, and Aleta McBane putting the finishing touches on the giant bison, Bison latifrons.

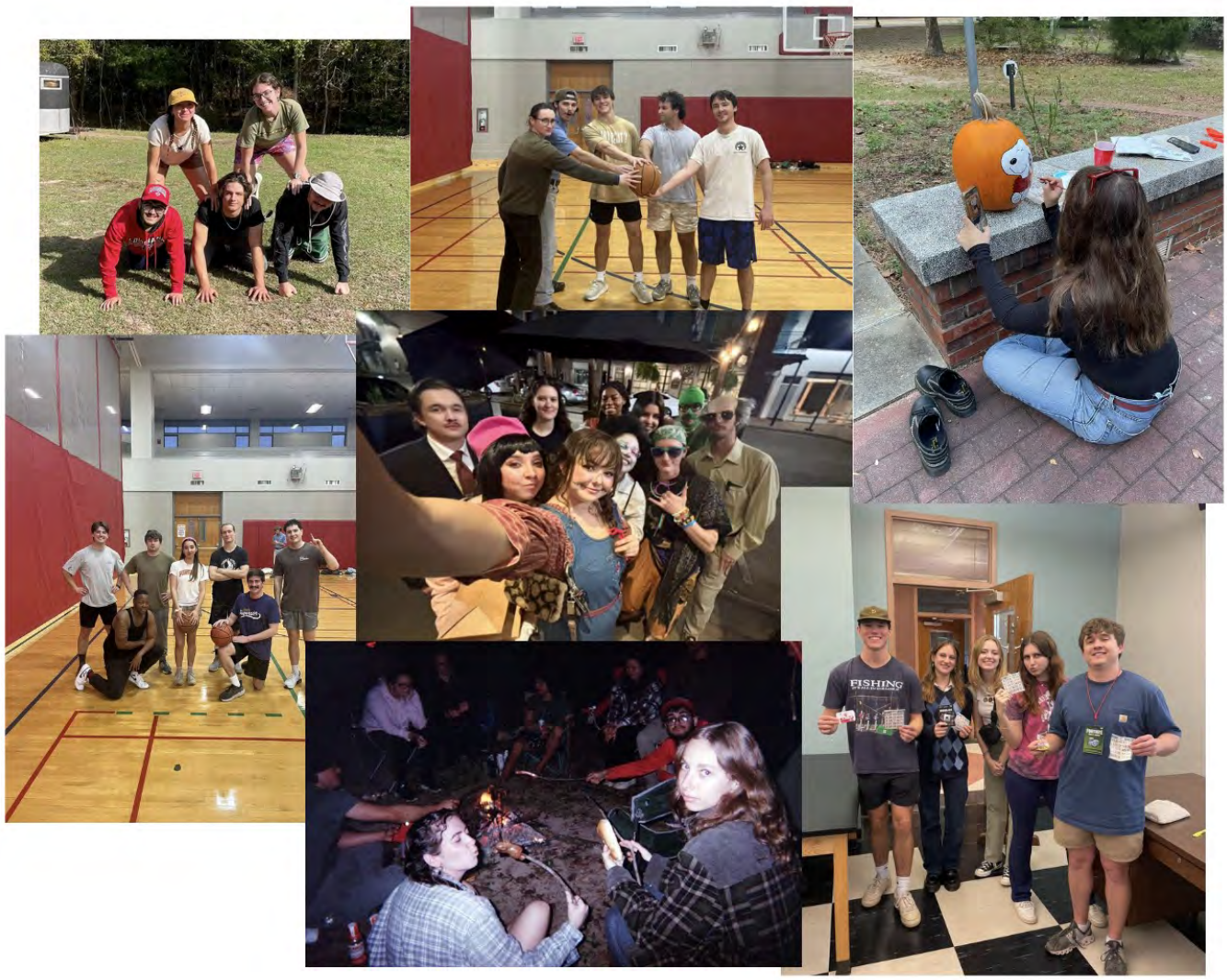
Wall mural by Ms. Emma Grekul at the UL Lafayette Science Museum.

Much of the fall semester was involved in research for a paper concerning the vertebrate paleontology a unique locality in northern Oregon, the Big Cut Locality. This site produced complete skeletons of a small horse and a fossil beaver curled up in a burrow. In addition, a large saber-toothed cat skull was found, as well as giant camels, javelinas, a variety of fishes, rodents, rabbits, foxes, and rhinoceros among other species. Ms. Emma Grekul, who rendered the Museum mural, undertook drawings of many of these specimens that will greatly enhance the publications of the fossils from the Big Cut.

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 with Dr. Hargrave, advising paleontological graduate students. Mr. Devin Surcouf is researching the paleontology of a Miocene locality near Granger, WA, for his Master's thesis in paleontology. At this site, fishes, turtles, carnivores, rodents, and some ungulates were collected under the direction of Dr. Martin. Also, collections made from Fossil Lake in southern Oregon over several decades through Dr. Martin's expeditions produced exquisite bird fossils that are now the subject of Master's thesis research by Mr. Cole Phillips.

UL Geosciences Society

The UL Geoscience Society is a student-led organization that brings the department together and provides bonding and learning opportunities. During the 2024-2025 school year the UL Geoscience Society participated in many events. A few notable mentions being a club camping trip, bi-weekly meetings, a Geoloween party, Thanksgiving, a crawfish boil, and volunteer events. ULGS is led by their President, Caitlyn Mullis, Vice President, Alex Owens, Secretary, Anna-Sophia Henry, and Treasurer, Alayna Martin. ULGS has a student-led museum on the third floor of Hamilton, where students can display anything they want from fossils and minerals to postcards. Some of the activities they have participated in at their bi-weekly meetings include: Geode smashing, Jeopardy, trivia, painting pumpkins and rocks, bleaching t-shirts, basketball, and movie nights. To raise money for their events, the students all pitch it and run a 3 day rock/baked goods sale.



ULGS members during some of their fun activities!

2024-2025 in Pictures

Scholarship Recipients

Geology Sciences Scholarship Recipients

Joe Battle - LGS Memorial Scholarship
Hailey Benoit
Myllah Brown
Karis Watson

Hugh Allen Bernard Memorial Scholarship
Shaun Gaspard

Bill and Heather Finley Scholarship
Funmilola Babalola

Paul M Toce Scholarship
Celeste Thille
Grayson Gillies
Caitlyn Mullis
Brandy McJimsey

Chevron - Gulf Oil Foundation Scholarship
Drew Davis

Walter James Rudick Scholarship
Leslie Meaux

Eberhardt Leschin Scholarship
Masie Minnick
Garrison Gentry
Aaliyah Mitchell
Johnathan Pillsbury
Shaun Gaspard

Marvin and Hazel Harvey Morris Scholarship
Zoe Allgood

Bill Paine - LGS Scholarship
Victoria Sanchez
David Starkovich
Anna Sophia Henry

POGO Scholarship
Peyton Madere

Nolan J. Badeaux Scholarship
Scott Leedy
Cade Halbach

Environmental Sciences Scholarship Recipients

Charles & Julia Walker Bourque Scholarship
Will Dupuy

Mary Sandoz Brown Scholarship
Joshua Nolan
Bree Landry

Overton Cade Scholarship
Caleb Fumuso

ULL Collegiate FFA Scholarship
Alanna Gaspard

Joel Fletcher Scholarship
Xzayvion Gaye

DR. Gonzales/Dean Fletcxher Scholarship
Alayna Martin

LA Garden Club Federation Dist III Scholarship
Kathryn Walker

South LA Mid-Winter Fair Association Scholarship
Riley Trahan
Chloe Boone
Bree Landry
Brenton Baquet
Daniel Chautin
Mael Missier
Mason Venable
Maddix Martel
Andrew Cart
Diana Kreamer

Charles Joseph Miller & Vivian Miller Scholarship
Emily Phillips-Deshotels
Caleb Fumuso
Hunter Hoffpauir
Joseph Kolb
Heather Brown
Francis O'Brien
Clinton Vincent
Daniel Chautin
Mael Missier
Mason Venable
Maddix Martel
Andrew Cart
Diana Kreamer
Alanna Gaspard

J.C. Higginbotham Scholarship
Clinton Vincent

Farmers & Merchants Bank Scholarship
Amelia Day
Caleb Theriot

Dr. S. L. & Mrs. G.A. Solymosy Scholarship
Spencer Simon
Caleb Aucoin
Spencer Vitello
Maria Franklin
Simone Szentgyorgyi

Tommy Sander Scholarship
Lawren Fabacher
Chloee Holt
Cole Johnson

Degrees Granted in 2024-2025

Bachelor of Science in Geology

Brown, Myllah Powers, Neva Owens, Alexander

Bachelor of Science in Environmental Sciences

Blanchard, Grace	De La Paz, Karessa	Miller, Nicholas	Pinell, Sherry	Schouest, Jordan
Caminita, Kaitlyn	LaGrange, Tanner	Moore, Madeline	Romero, Luke	Trosclair, William
Dauphine, Kaitlin	Meaney, John	Mudge, Ethan	Savoie, Crystallyn	

Master of Science in Geology

Anderson, Savana Dittman, Margaret Mohamed, Bibi 'Asseeya'

Master of Science in Environmental Sciences

Bastakoti, Bipin	Gondra, Aaron	Jenkins, Eriell
Gelal, Ananya	Heafner, Holly	Miller, Blair
	Islam, Sadia	

Doctor of Philosophy in Earth and Energy Science

Dr. Hunter Bouillion Dr. Mason Douglas Hayward

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