

# Advancing Excellence

POWERING **DISCOVERY** THROUGH **PHILANTHROPY**



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# Advancing Excellence

POWERING DISCOVERY THROUGH PHILANTHROPY



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ON THE COVER: (L-R) Talita Gomes, John Rodriguez, Hudson "Finley" Davis, Brooklyn Douglass and Vicente Pena measuring the flow of the Blanco River near Wimberley. Photo: Ebony Williams.

# Dear friends and alumni of the Jackson School,

It is with great excitement that I introduce you to the newly redesigned *Advancing Excellence!* The goal of this publication is to illustrate the ways that your support helps the Jackson School of Geosciences deliver unparalleled education and research. While these stories make me so proud, they also make me a little wistful! That's because, as many of you know, I will be stepping down as Dean of the Jackson School of Geosciences in January 2026.

Serving as Dean has been the highlight and highest honor of my career. I will move on to my next adventure knowing that the Jackson School is in a great position to thrive in the future. And, I have come to deeply appreciate the important role that you play in that success!

When I began this role six years ago, I knew I was joining one of the top geoscience institutions in the world that was striving to meet the lofty ambitions of the Jacksons' transformational investment (as Jack Jackson would call it). What surprised me was the legacy of Longhorn pride—the powerful passion and energy that our alumni and friends bring to this school. Even as an alumna of three universities and veteran of two others, I still had never experienced anything close to your deep commitment and bountiful generosity. Your monetary gifts, your gifts of time, your advice and student mentorship, and your abiding confidence in us—all of these provide immeasurable value and truly enable all that we do! Getting to know many of you has been one of the great joys of this position. I will remember you with deep respect and great fondness!

Have fun as you read this issue of *Advancing Excellence*. The “fingerprint” of your giving is in every story (and your faces, too, in our photo highlights from the 20<sup>th</sup> anniversary event)!

Inside you will meet recent B.S. graduate Danielle Zaleski and learn how she was supported to grow as a researcher and citizen. I just saw Danielle at our new graduate student orientation, so expect more stories from her to come! And we are very excited to tell you how a new gift is opening opportunities for our hydrology and environmental sciences majors to interface with Texas water agencies and help us have the water we need to grow and thrive.

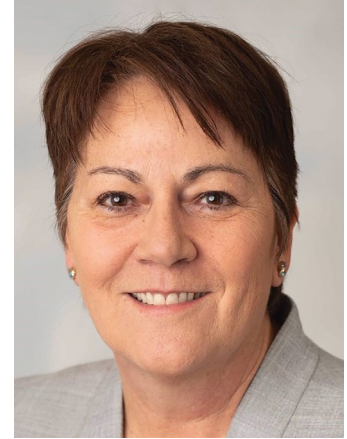
Finally, enjoy our tribute to the one and only “*Guad Father*,” Professor Charlie Kerans. After a remarkable 40 years of science, education, field work and loud shirts, Charlie is retiring this August. I know many of you have your own memories of Charlie and how he inspired you (or left you far behind in the field). If you know Charlie, you won't be too surprised to learn that he will jump right back into field work in the Bahamas; the top science, the field work and the sartorial splendor will continue! The combination of accomplished faculty and a great school is unstoppable. We are blessed to have both in this special school that we all work together to build.

*Thank you so much!* It has been an honor and a privilege.

Hook 'em!



Claudia Mora, Dean



## Friends and Alumni Events Calendar 2025-2026

**Reception Geological Society of America**

**Oct. 20, 2025**  
6:30-8:30 p.m.  
Casa Rio  
San Antonio, TX

**Jackson School Tailgate**

**Nov. 1, 2025**  
9-11 a.m.  
UT Jackson Geological Sciences Building  
Austin, TX

**Reception American Geophysical Union Reception**

**Dec. 17, 2025**  
New Orleans, LA

**Reception NAPE Summit**

**Feb. 19, 2026**  
Houston, TX

[jsg.utexas.edu/alumni/events-calendar](http://jsg.utexas.edu/alumni/events-calendar)

# WORLD-CLASS Mexican Minerals Join the Jackson School of Geosciences Collection

By Monica Kortsha

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**S**parkling with rich inky blues and vibrant greens, you don't need to be a geologist to appreciate the 40 Mexican ore minerals that recently joined the gem and mineral collection at the Jackson School of Geosciences, thanks to a generous donation from Eric Long and spouse Tracy Walsh.

The beauty of the minerals, which are on public display in the school's Hamman Gem and Mineral Gallery, speaks for itself.

And in the case of one blue azurite specimen,



it's backed up with a trophy. The mineral is the 2022 Miguel Romero Memorial Award winner, an honor bestowed to the best Mexican mineral at the world-renowned Tucson Gem & Mineral Show. (The trophy is displayed alongside the mineral in the gallery case.)

But for the geologically inclined, the Long Collection offers unique insight into the geology of a copper mine, with the majority of the collection hailing from the Milpillas Mine of Sonora, Mexico. The mine produced some of the best specimens of azurite and malachite in the world for 13 years before operations were indefinitely suspended in 2020. Many of these specimens can now be seen at the Jackson School.

"Azurite is a geology student's mineral. We teach it in every mineral class," said Kenneth Befus, the curator of the school's gem and mineral collections. "It's an amazing blue color, and since it's a copper mineral, it matters to the global economy. And we now have 15 world-class azurites."

The Long Collection features minerals from each of the four main working levels of the mine. Together they document the geological changes that happen from one layer to the next. One specimen in the collection even serves as a



record of chemical transition—changing from blue azurite to green malachite in the scope of a single mineral.

Each of the minerals in the collection are ore-minerals, meaning they contain the same chemical ingredients as mined metals used in industrial applications. But most of the mineral value is related to rarity and aesthetics rather than the metals they contain.

“These things are not trimmed, they’re not polished. This is what nature does on its own, forming these crystals, these beautiful things,” said Long.

Long and Walsh have been collecting minerals for about 15 years, frequenting “rock shows” to find new specimens. (And explaining to friends that they were indeed traveling to see literal rocks, not rock bands.)

But Long’s interest in geosciences extends much further back. His family moved around a lot while he was growing up, and each new city offered a new museum with a rock collection to explore. In college, he studied petroleum engineering and geology, going on to become the president and CEO of the oil and gas services company USA Compression. He retired from that role in October 2024.

Long and Walsh have donated minerals to Arizona State University and the Colorado School of Mines. And there was plenty of interest in their collection of Mexican ore minerals from both university and national collections, Long said. But they decided on The University of Texas as the home for this special collection for a few reasons. They wanted to pay tribute to the historical connection between Texas and Mexico, and beyond that, they wanted to spark conversations about mining at a university known for its energy research.

“It’s such a forward-looking venture to seed the collection in its early stages,” Long said. “UT has the expertise and interest here, and these minerals can help with their mission of education.”

Jackson School Dean Claudia Mora said that the Long Collection complements the school’s growing research into critical minerals and mining, and is a great entry point for all of campus to learn more about the geosciences.

“The beauty of this gift isn’t just in its dazzling brilliance but in that it is a complete record of a large ore system,” she said. “This is an amazing addition to any Earth science program. I am grateful to Eric and Tracy for their gener-

osity and their investment in the future of the Jackson School.”

So, what’s the best mineral out of the whole collection? For Long, it’s all a matter of personal preference.

The award-winning azurite might check all the right boxes for the mineral connoisseur. But there’s also the stacked spheres of malachite that look like a green globular rabbit. While it’s not going to win any trophies at the Tucson Gem & Mineral Show, if it sparks an interest in geosciences, that’s a priceless specimen in his book.

“It’s the least valuable ... but it can start that connection right there,” he said. **AE**



A selection of copper-ore minerals from the Long Collection. **Clockwise:** Rabbit-shaped malachite; a mineral containing both azurite and malachite; an award-winning azurite (2022 Miguel Romero Memorial Award). *Photos: Jackson School of Geosciences.*

▶ To donate to the collections, contact  
Nick Warrington: [nwarrington@jsg.utexas.edu](mailto:nwarrington@jsg.utexas.edu)

# Jackson School Alumnus' Company Wins **XPRIZE** **IN CARBON** **REMOVAL**

By Monica Kortsha



**T**he XPRIZE is a global competition for radical breakthroughs for the benefit of humanity. And for the winners of the prize, which now encompasses multiple categories, it promises a purse that can make a real impact.

But to take home a multi-million-dollar prize, a winning team has to do more than have an amazing idea. They have to show

the idea works by meeting specific goals and passing muster with a board of subject matter experts.

This April, the company Mati Carbon met the challenge, winning the \$50 million grand prize in carbon removal. The company was among the four finalists that successfully removed more than 1,000 net tons of carbon dioxide (CO<sub>2</sub>) in the final year of the four-year carbon removal competition, which began with over 1,300 teams from 88 countries

Leading the company's science team to the win was Jackson School of Geosciences alumnus Jake Jordan (Ph.D. 2017), the chief science officer for Houston-based Mati Carbon.

"We've been vetted by a panel of some of the most serious people I can think of for evaluating a project like this," Jordan said. "It's really exciting, but it's also a pretty big mandate to be a good steward of this money and to make sure that those resources are used to better the primary stakeholders, which of course are our partner farmers."

Mati Carbon removes CO<sub>2</sub> from the atmosphere with enhanced rock weathering while increasing crop yields for smallholder farmers in India and Africa, who farm on small plots without industrial fertilizers or high-tech machinery.

The company's process involves spreading pulverized volcanic rocks onto agricultural fields. As the rock is weathered away, it undergoes chemical reactions that both trap CO<sub>2</sub> from the atmosphere and release mineral nutrients that crops need to thrive.

Farmers working with Mati Carbon have seen their crop yields increase by about 20%, said Jordan, who presented on the yields at the annual meeting of the European Geosciences Union in Vienna this year. The company tracks the volume of stored CO<sub>2</sub> and then sells carbon credits to corporations with net zero goals.

Mati Carbon is a textbook example of applied geoscience. But when Jordan was earning his doctoral degree at the Jackson School, he focused on fundamental science questions and developed models for the migration of magma in planetary interiors with Professor Marc Hesse.

Left: Jake Jordan graduates with his doctoral degree from the Jackson School of Geosciences in 2017. Photo: Jake Jordan.

Jordan's doctoral research helped shed light on the transport of geochemical tracers in melts — all while putting his own spin on things, Hesse said. He points to a paper Jordan led that mathematically demonstrated how pulses of melt transport geochemical signatures in vortices, similar to smoke rings, rather than leaving them behind, as was previously thought. At the same time he was working on the paper, Jordan was spending his spare time fixing up a vintage pen plotter to make science-informed artworks.

"In this world where everything is so focused on productivity, Jake shows that sometimes it pays not to take the straight path to come up with real innovation," Hesse said. "That's important to remember. It's not just about mass output."

Although Jordan has moved away from modeling planetary interiors at Mati Carbon, he said that there's a thematic connection between his doctoral research and his current carbon storage work.

"What melt migration basically means is, how do these little bits of melt from the planetary interior make it onto the surface? And why do they look the way that they do?" Jordan said. "And here I am now, trying to find those rocks so we can put them on farm land."

Jordan first became interested in the geosciences while an undergraduate at The University of Chicago. He credits an introductory geology course with showing him that geosciences had "all the coolest problems." He switched his major from economics to geophysics and did his undergraduate thesis research on modeling tsunamis before coming to The University of Texas at Austin for graduate school.

Jordan said that his work at Mati Carbon is driven by more than an interest in science, though. He wants to contribute to climate change solutions that bring tangible benefits to the communities that stand to be the most affected by climate change—an approach that he believes will help lead to carbon storage solutions that can work in the long run. **AE**

▶ **Jake Jordan will be returning to The University of Texas at Austin in spring 2026 as a speaker at UT Energy Week and the Jackson School's DeFord Lecture Series.**

## UT Team Advances to XPRIZE Wildfire Finals



**A** Longhorn-led team cinched the XPRIZE for carbon removal (see story on left.) Now, a team of researchers led by The University of Texas at Austin has advanced to the XPRIZE Wildfire finals.

Researchers from the Jackson School of Geosciences and UT Cockrell School of Engineering are teaming up with colleagues from the University of Southampton, University of Edinburgh and Texas A&M Forest Service to develop an autonomous fleet of drones that can rapidly detect and contain wildfires.

Calling themselves FLARE-X, the team qualified this summer as semifinalists to move on to the next stage of the XPRIZE Wildfire's \$5 million Autonomous Wildfire Response Track competition, part of the larger four-year, \$11 million XPRIZE Wildfire contest.

The UT team is one of 15 teams out of over 100 initial competitors that remains eligible for the prize. The finals will happen next July, with the FLARE-X semifinals demonstration taking place in October 2025. After several rounds of testing and validating their technology, teams will have just 10 minutes to detect and suppress a fire within a 1,000 km<sup>2</sup> (386-square-mile) competition area somewhere in Alaska.

The FLARE-X team will use several different types of uncrewed aerial vehicles to both detect and suppress fires. The team's solution involves three main stages: dynamic pre-fire risk mapping; active fire detection, monitoring and verification; and fire suppression.

The Jackson School is focused on developing advanced infrared sensors for fire detection and geolocation, with Research Assistant Professor James Thompson and Associate Professor Ashley Matheny leading the effort. **AE**

The FLARE-X Team celebrates successful flight testing in April at the Texas A&M RELLIS Flight Test Facility. *Photo: Cockrell School of Engineering.*

▶ Stay tuned for future updates on team FLARE-X: [jsg.utexas.edu/flare-x](https://jsg.utexas.edu/flare-x)



# Microplastics research brings out best in young scientist

Recent graduate Danielle Zaleski earns research accolades and UT presidential award

By  
**Monica  
Kortsha**

**M**any geoscientists get into the field through a love of the outdoors, and a chance to escape the city. But for Danielle Zaleski, cities are where some of the most interesting—and important—questions in geosciences originate. That includes her research on the buildup of microplastics in the sediment of Lake Austin and Lady Bird Lake, both just a couple of miles from The University of Texas at Austin campus.

“When I saw an advertisement about researching microplastics in Austin’s waterways, that was immediately eye-catching,” said Zaleski, who just graduated with her Bachelor of Science in Geology from the UT Jackson School of Geosciences. “It had the urban aspect that I

liked, along with the geology and the environmental work.”

Working with the Jackson School’s Cornel Olariu and Marcy Davis, Zaleski has spent the past two and a half years as a student scientist analyzing how microplastics—ranging in size from 45 micrometers to 1 millimeter—have been accumulating in the lakes as the city grows. (See sidebar.)

Her research is helping inform a City of Austin report on the scope of microplastic pollution and what can potentially be done about it. At

Above: Danielle Zaleski (middle) with her advisors Marcy Davis (left) and Cornel Olariu in the sediment laboratory. Photo: Constantino Panagopoulos.

the same time, it has helped Zaleski grow as a geoscientist—and prove herself as a valuable scientist in the lab.

“Give her a small idea, and then suddenly, the next day, it’s double,” said Olariu, a research associate professor at the Department of Earth and Planetary Sciences. “It’s her style to improve and innovate.”

For example, Olariu credits Zaleski with coming up with the method the lab uses to count microplastic particles in lake core samples under the microscope, which can reach into the thousands.

“I told her a few basic things about [the software we use to count the microplastics], but she discovered the method we use herself and she gave us the way to do it,” he said.

Zaleski’s excellence in research has made her a two-time winner of the Jackson School’s student research symposium in the undergraduate category. (The first win was part of a group poster.) And this spring, Zaleski won the President’s Student Employee of the Year Award from Jim Davis, the president of UT Austin.

Usually, the president’s award goes to students excelling in administrative positions, which make up the majority of student jobs on campus. But Zaleski was selected for the award based on her aptitude as a researcher, said Marcy Davis, an engineering scientist at the University of Texas Institute for Geophysics, who nominated her for the award.

“She’s a real self-starter in terms of her science, and she is really good at it,” said Davis.

Zaleski was drawn to the geosciences—and the Jackson School specifically—after taking an adaptation of the Jackson School’s introductory Earth, Wind and Fire course as a senior in high school through UT’s OnRamps program, which enables high schoolers to take popular UT courses for dual credit.

“This is the only place I applied to,” Zaleski said. “My heart was pretty set on it that after that class.”

Now, after earning her bachelor’s degree this spring, Zaleski is continuing her microplastics research at the Jackson School as a master’s student, and is expanding the scope of her research area to the Texas coast.

## MICROPLASTICS In Austin’s Lakes



Microplastics are everywhere.

Scientists have found them on Earth’s highest peaks and in its deepest ocean trenches. So, when Jackson School undergraduate student Danielle Zaleski started filtering microplastics in core samples from the bottom of Lake Austin and Lady Bird Lake, their abundance came as no surprise.

She found them in every section of core pulled from the lake bottoms, with most being road wear particles — bits of asphalt binding and synthetic materials from tires.

For the 2025 Jackson School student research symposium, Zaleski presented on the microplastics filtered from a 2.84-meter-long core from Lady Bird Lake. The core was divided into 20-centimeter intervals, resulting in 15 total samples.

The microplastic accumulation in the core samples reflects the city’s booming growth. The oldest, deepest layers of the near 3-meter core have the fewest road wear particles, about 200 per 100 grams of sediment. Samples from the newest, shallowest layers have about 4,600 per 100 grams of sediment.

Zaleski and her advisors are planning on determining the age of the core sediments, so the microplastic spikes can be potentially correlated to specific events, such as development or flooding.

She said that while her time in the lab has helped build a host of technical skills that will certainly come in handy during the next stage of her research career, she’s grateful for the challenges the school has provided throughout her undergraduate years—from presenting her research, to keeping up in field camp.

“I’ve grown a lot more than I ever would have expected,” Zaleski said. “I am extremely appreciative of the resources provided by the school because I don’t think I ever would have sought out these kind of experiences if they weren’t presented to me here.” **AE**

## JACKSON SCHOOL SUPPORTS STUDENTS

The Jackson School of Geosciences provides robust support to its students so they can focus on their studies and advance geosciences research. Danielle Zaleski has been a recipient of numerous scholarships while at the Jackson School that have helped her excel and pursue her future as a geoscientist.

To help support student research, contact Elizabeth Gibson: [egibson@jsg.utexas.edu](mailto:egibson@jsg.utexas.edu)



# ‘THE GUAD FATHER’ Says Goodbye

Kerans Retires After Remarkable 40-Year Career at UT

By Monica Kortsha

**Foreground:**

Charlie Kerans.

**Background:**

Toe-of-slope deposits of the Lamar Limestone as seen from the Permian Reef trail of the Guadalupe Mountains.

*Photos: Jackson School archives.*

It's 8:30 a.m. on a Sunday morning in April, and cars are whizzing by on the highway near Austin's 360 Bridge. On the side of the road, about 25 geology students from the Jackson School of Geosciences are studying the limestone cliffs that line the highway.

The spot may be busy now, but in the Early Cretaceous? There wasn't much going on here at all, save for the slow piling up of carbonate material at the bottom of a

shallow sea. That's exactly why Professor Charlie Kerans brought his GEO 420K: Introduction to Field and Stratigraphic Methods class here.

The steady buildup of sediment over millions of years left behind a solid limestone deposit that persisted even as the sea went away. When the Capital of Texas Highway cut through the rock, it revealed a slice of geologic history.

"It's a good place to learn," Kerans said,



standing with a hammer in hand to nail up magnified photos of rock samples onto the outcrop so students could more clearly see the sediment grains. “[The rock is] all gray. But the story is all in the details.”

Kerans, one of the foremost carbonate geologists in the world, has made a career of reading the details in rock. At UT, he taught hundreds of others to do the same, leading field trips in Texas and around the world for industry groups, geological societies, and Jackson School students alike.

But the local roadcut is an old favorite. Kerans has been coming here since the 1980s, around the time he started at The University of Texas at Austin as a research associate at the Bureau of Economic Geology. That makes the outcrop a fitting stop for his last field trip at UT.

Kerans officially retired in August, closing out 40 years of research, teaching and countless hours in the field as a UT professor and researcher.

“Getting people out there, that’s one of the things that I feel passionate about,” Kerans said. “Just getting people out to see the geology in the field has always been a motivating thing for me.”

Kerans spent his first 20 years at the UT

Bureau of Economic Geology, where he rose in the ranks to senior research scientist and the principal investigator of the bureau’s Reservoir Characterization Research Laboratory (RCRL). He spent the next 20 as the Robert K. Goldhammer Chair of Carbonate Geology at the Jackson School’s Department of Earth and Planetary Sciences, where he shifted gears toward prioritizing teaching and advising students. He also served as department chair from 2016–2020.

Even while leading the department, Kerans maintained close research ties with his bureau colleagues and industry collaborators.

“This integration between academia and industry that Charlie has established throughout his career is unique and widely recognized around the world,” said Ted Playton, who earned his master’s and doctoral degrees working with Kerans (M.S. 2003, Ph.D. 2008), and is now a geologist at Matador Resources Company.

“He’s a world-class geologist,” said Playton. “He’s worked with everyone, he knows everyone. His deep insights and extensive knowledge enable him to solve complex industry problems through understanding and characterization of the geology.”

Graduate student Kyle Fouke points to a geologic section while students look on. Kerans is pictured in the orange hat. Photo: Monica Kortsha.



**Above:** Charlie Kerans atop a Pleistocene reef on San Salvador Island in The Bahamas. *Photo: Ted Playton.*

**Below:** Kerans with Esben Pedersen (B.S. 2018, M.S. 2020) and Sam Robbins (B.S. 2018, M.S. 2021) during Geo Week festivities in 2018. *Photo: Jackson School archives.*

Kerans got to know industry geologists closely through the RCRL, one of the bureau's oldest research consortia. The program started in 1987 and has run continuously since then thanks to support from member companies.

Consortium membership allows companies first access to research findings and researcher insight. In the 1980s and '90s, Kerans' research on the outcrops in the Guadalupe Mountains (or "Guads") of West Texas and New Mexico shed new light on the subsurface environment of the Permian Basin, one of the world's most productive oil and gas fields. The mountains rim the northwest edge of the basin. Kerans' research provided information that helped

boost the recovery of oil and gas from the basin's carbonate reservoirs, said Scott Tinker, the director of the Bureau of Economic Geology from 2000-2024.

"Charlie was a pioneer working these big canyon walls as analogs for subsurface production," said Tinker, who got to know Kerans while a research geologist for Marathon Oil in the 1990s, and a member of the RCRL consortium.

Kerans and Tinker would later publish a book together called "Carbonate Reservoir Characterization," which was a best-seller in its field.

Pat Welch, the past president of the West Texas Geological Society, said that Kerans and his students gave clarity to what was formerly a confusing stratigraphic landscape, with geologists sometimes calling the same formation by different names.

"Charlie put together this stratigraphic framework that applies all around the Permian Basin and even into the Midland Basin," Welch said. "We would not be nearly as far along in our development of the Permian Basin without the work Charlie has done."

Kerans' research has earned him multiple awards from professional geological associations. This includes the Society for Sedimentary Geology's Francis J. Pettijohn Award (2015) for excellence in sedimentology, and the American Association of Petroleum Geologists Robert R. Berg Outstanding Research Award (2022). It's also



led to a nickname from his students that's an honor all its own: "The Guad Father."

Starting in about 2008, Kerans expanded his research from the West Texas desert to a more tropical locale: The Bahamas. While the Guads preserve the remnants of an ancient Permian reef from 270 million years ago, The Bahamas and nearby Turks and Caicos Islands preserve reef geology that is much more recent, about 120,000 years old. This paleoreef co-exists alongside modern-day corals and shoreline deposits. In addition to deploying drones and LIDAR to capture large swaths of geology—a method that Kerans has been refining at field sites for years—Kerans' outings now involve suiting up in scuba gear to explore underwater formations. The research is providing details about the recent history of sea-level rise in the region, and the role of the landscape in affecting that rise. The findings have relevance to how contemporary sea level rise may play out on shorelines across the world.

"If whoever sees the most rock wins, there is no one close to Charlie," Tinker said.

Kyle Fouke earned his doctoral degree in 2025 and conducted his thesis research on Turks and Caicos. But he accompanied Kerans to a range of field sites, including the Guads and Sacramento Mountains. He said his years with Kerans has taught him the value of learning in the field.

**"Getting people out there, that's one of the things that I feel passionate about. Just getting people out to see the geology in the field has always been a motivating thing for me."**

"You get out there, you show up, and look at the rock," he said. "Although computer models offer valuable information, Charlie has shown me the rock record and getting your nose on the rock is where the most important information lies."

According to Kerans, being able to spend so much of his career the field—and the experiences that stem from that—has been a reward all its own.

"It's epic," he said reflecting on the field work that's been at the heart of his career. "I always kid my petroleum engineering



friends: What stories can you tell? 'I had a rough time at the golf course' or something? For a geologist, we have adventures built into things."

What's the next adventure for Kerans? He plans on keeping up his research part-time, consulting, and doing more scuba diving. He said he is also looking forward to spending time in the great indoors of the bureau's core repository digging into sample boxes and describing core. **AE**

*Read more about Professor Charlie Kerans and his adventures in the field in the upcoming 2025 edition of the Jackson School's Newsletter.*

**Top:** Class photo of the GEO 420K: Introduction to Field and Stratigraphic Methods class during their visit to a local roadcut. The trip was Kerans' final UT field outing before retiring this August.

**Above:** Kerans with Michael McGrady and Miles Whitehill.

*Photos: Monica Kortsha.*

**To make a gift in honor of Charlie, contact Andrew West: [awest@jsg.utexas.edu](mailto:awest@jsg.utexas.edu)**



BY ANTON CAPUTO

## A new gift will make UT's hydrology program even stronger, helping ensure the future of one of the state's most precious resources

Trudging down a dusty path, skirting ant hills and dripping sweat might not seem like the ideal way to find water. But these Jackson School of Geosciences hydrology students aren't out for a trip to the lake or river. They're learning what it takes to find—and measure—water in the Hill Country when creek beds are dry and rain is a distant memory.

Understanding how much water lies under your feet when the land is parched, and how much can be pulled up before wells run dry and the environment suffers irreparable damage has always been the challenge of providing water in Central Texas—and beyond.

That's why training hydrologists has long been a mission at the Jackson School. It's a mission that was recently boosted by a \$1 million gift from an anonymous donor who wants to see the hydrology program continue to thrive and evolve. That evolution could pay big dividends for Central Texas said Research Associate Professor Marcus Gary, who helps lead students on educational and research trips like this one.

"There's really some unique opportunities that the Jackson School has with regards to groundwater resources," he said. "There's such a big need in Central Texas and throughout

Texas. We should tackle the things in our backyard. I think this is an opportunity to really champion that."

The gift will help fund research trips, equipment and internships for students to work with the groundwater districts and agencies throughout Texas that are responsible for managing the state's water. And soon, thanks to the donation, the Jackson School will roll out a one-stop public web portal where anyone can access the data and studies that Jackson School students are conducting on Texas water.

Gary believes there is a ready audience for the information, including the agencies and groundwater districts that often work hand-in-hand with UT on the state's complicated water issues. These connections, he explains, are vital for the state and the school.

Gary himself is a perfect example. He earned his doctorate from the Jackson School

**Above:** Left to right: Kara Posso (B.S. '17), Ebony Williams (TA), Grace Castle, Jazmin Villeda and Fernando Pagan (TA) conducting infiltration experiments at the White Family Outdoor Learning Center (WFOLC). *Photo: Ebony Williams.*

and spent a long career as a hydrologist in Texas, working, among other places, at the U.S. Geological Survey and the Edwards Aquifer Authority, where he served as principal geoscientist for aquifer science. And since 2011, he has worked part-time at the Jackson School as an adjunct professor before coming on full-time in March 2025.

Gary can quickly rattle off former students who are working around the state at water management agencies like the Barton Springs-Edwards Aquifer Conservation District and the Texas Water Development Board. They all learned their trade from Jackson School hydrologists, just like the students working today at the school's White Family Outdoor Learning Center—a 266-acre ranch outside of Dripping Springs.

Brooklyn Douglass is one of those students. She is closely monitoring a plastic apparatus as it slowly pumps water into the ground. Douglass graduated from Austin's Lake Travis High School with aspirations of being a meteorologist. That changed when she was introduced to hydrology at the Jackson School.

"I like working in the field," she said. "I like science, and I want to help people and the environment. Hydrology is just really cool."

Cool and important. Texas' population is expected to increase from today's 31 million to more than 51 million by 2070. Yet its existing water supplies are expected to decrease by about 18% as aquifers are depleted, according to the Texas Water Development Board. This means that it's vital to account for and manage every drop.

Here in the field, Jackson School hydrology students are learning to take cutting-edge equipment and scientific research to address the age-old problem.

Douglass and the other students on her team are engaged in "guelphing," a technique that involves pumping water into the shallow ground to assess how well it moves through the soil. They're among about two dozen students divided into small teams conducting hydrology exercises and collecting data.

Others are taking turns using a neutron probe to measure moisture belowground. Another group is checking a unique vadose zone monitoring system to understand how much water is contained in the rocky zone between the surface and the water table that is vital for trees' survival during prolonged drought. They're also conducting electromagnetic surveys to map near-surface moisture.

The goal today, as explained by hydrology Associate Professor Daniella Rempe, is to learn how to collect and use data to understand how the changing Texas landscape—both trees and people—control groundwater recharge.

The White Family Outdoor Learning Cen-



**Above:** Hawkins Borer conducting electromagnetic geophysical surveys at the White Family Outdoor Learning Center. **Middle:** Doctoral student Josiah Sananda demonstrating the vadose zone monitoring system. **Below:** Madison Fail (left) and Brooklyn Douglass (right) taking infiltration measurements at the WFOLC.

Photos: Anton Caputo.

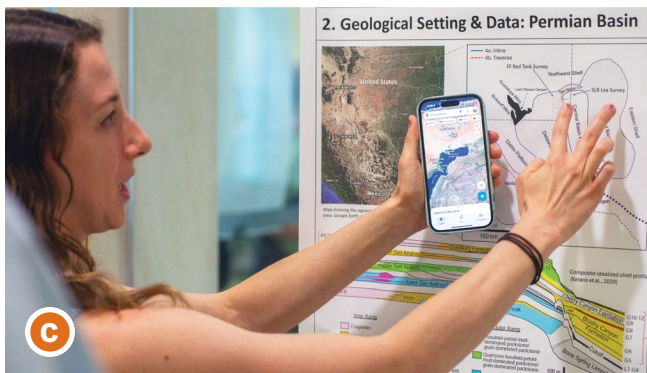
ter's Hill Country setting provides a unique opportunity to observe how mature oak and juniper ecosystems interact with subsurface water during and after drought to impact recharge into the aquifer below.

"There's no substitute for getting your hands dirty," she said. "What our students learn in real time here in Central Texas applies across Texas and beyond."

Finley Davis, a senior from McKinney, Texas, said the experience is eye-opening. After this hydrology field camp, he's leaving for an internship in Pennsylvania where he will be helping update federal flood maps. Still, he can't help but think that he might have found a future calling on this hot, dusty trip to the Hill Country.

"I haven't had much experience, but I really do like the groundwater stuff," he said. "This isn't just doing fieldwork for the sake of doing fieldwork. This is about having a plan in mind and making an impact." **AE**

**To support the hydrology program, contact Elizabeth Gibson: [egibson@jsg.utexas.edu](mailto:egibson@jsg.utexas.edu)**



**A)** Terry and Elliott (M.A. '82) Pew; **B)** Nysha Chaderton (M.S. '05, Ph.D. '09), Tiffany Benavidez (B.S. '05; M.S. '08), Eleanor Cote (B.S. '22); **C)** Jennifer Kohn (Ph.D. candidate); **D)** Department Chair Danny Stockli, lab manager Lisa Stockli, Frank Cornish (M.A. '75)



**A)** Dave Cook and Gretchen Gillis (M.A. '89); **B)** Kris (B.S. '14; M.S. '16) and Elisa Voorhees; **C)** Denis Potapov (B.S. '23) and Professor Charlie Kerans; **D)** George Davis (M.A. '66) and Dean Claudia Mora; **E)** Lab manager Josh O'Connell; **F)** Department Chair Danny Stockli; **G)** Barnes and Pam (M.A. '84) Darwin



**A)** Distinguished Senior Lecturer Emeritus Mark Helper, Dean Emeritus Sharon Mosher, Dean Claudia Mora and Pete Maggiore; **B)** Raul and Tiffany (B.S. '05; M.S. '08) Benavidez, Ana Ramirez (B.S. '06), Tamara Zissman (B.S. '05) and Shibu Mathukutty (B.S. '05); **C)** Chuck (Ph.D. '78) and Cathy Williamson; **D)** Nysha Chaderton (M.S. '05, Ph.D. '09); **E)** Elliot Pew (M.A. '82); **F)** Bureau of Economic Geology Director Lorena Moscardelli; **G)** Student and alumni panel; **H)** Pressure Core Center lab tour led by Josh O'Connell



Listen to friends and alumni share their stories about their time at the Jackson School of Geosciences.

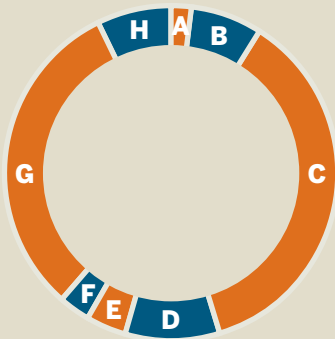


# JACKSON SCHOOL BY THE NUMBERS

## Undergraduate Students

 54%  46%

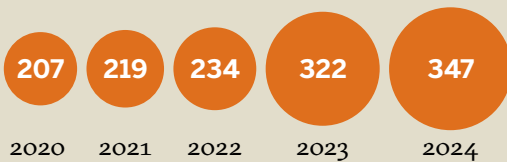
Total Number of Undergraduate Students: 347



Distribution by Major

- A** Geological Sciences, Entry-level/Undeclared ..... 2%
- B** B.A. Geological Sciences ..... 7%
- C** B.S. General Geology ..... 36%
- D** B.S. Geophysics ..... 9%
- E** B.S. Hydrology and Water Resources .. 4%
- F** B.S. Climate System Science ..... 3%
- G** B.S. Environmental Science ..... 31%
- H** B.S. Geosystems Engineering ..... 7%

## Total Number of Undergraduate Students



## Faculty & Research Staff

**133** **146**

Faculty and Research Faculty

Research Staff and Postdoctoral Researchers



## Graduate Programs

### Energy and Earth Resources

 55%  45%

Total Number of Students: 42  
Masters: 100%

### Geosciences

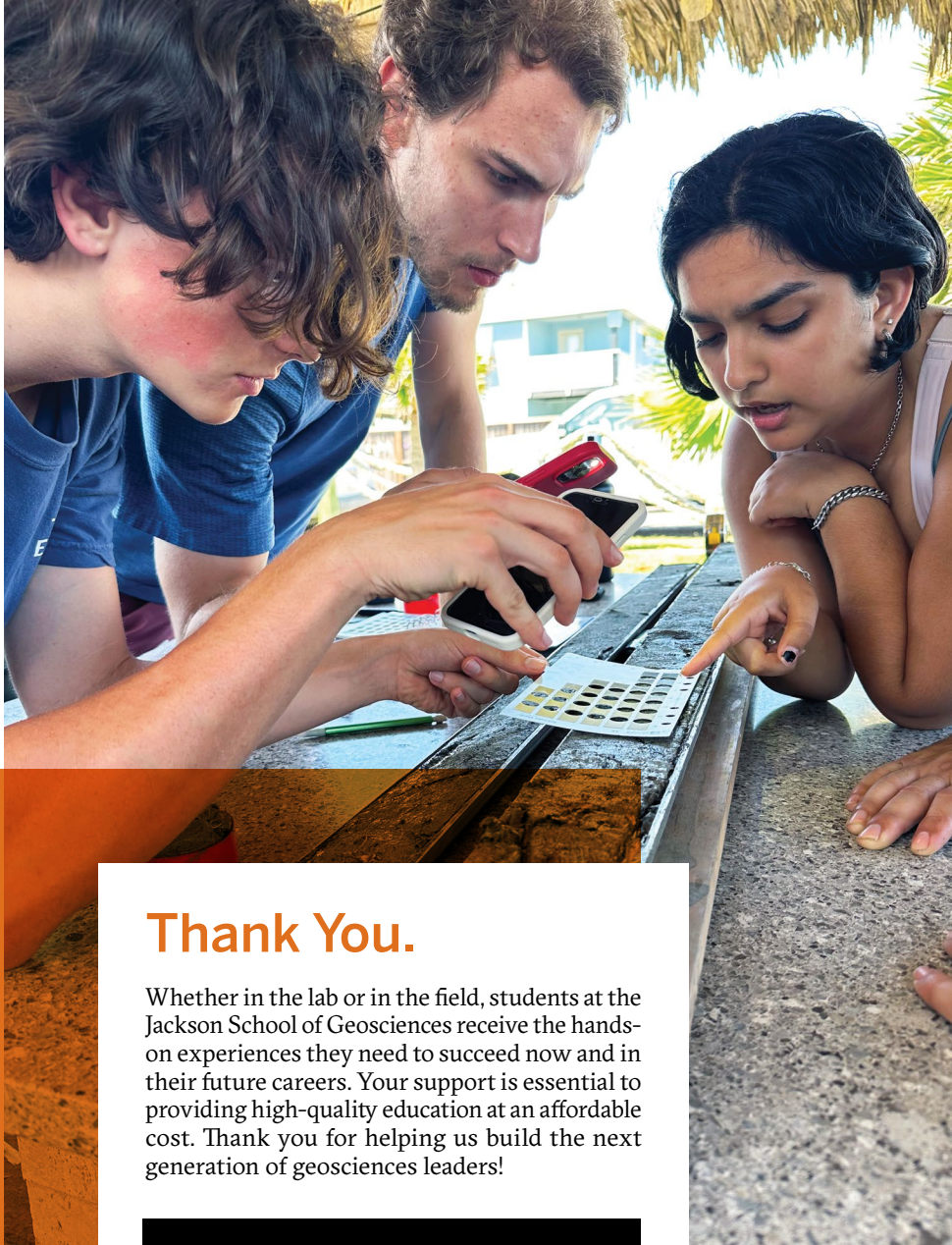
 48%  52%

Total Number of Students: 170  
Masters: 38%  
PhD: 62%

### Graduate School Rankings

- #2** in Geology
- #3** in Paleontology
- #5** in Geophysics & Seismology
- #7** in overall Earth Sciences
- #13** in Geochemistry

Rankings by U.S. News & World Report



## Thank You.

Whether in the lab or in the field, students at the Jackson School of Geosciences receive the hands-on experiences they need to succeed now and in their future careers. Your support is essential to providing high-quality education at an affordable cost. Thank you for helping us build the next generation of geosciences leaders!