2025 NEWSLETTER

20 Years of the Jackson School of Geosciences

page 37

The University of Texas at Austin
Jackson School of Geosciences

ON THE COVER

Front Cover Images *(from top left)*

Graduation; 2006

Ginny Catania; Greenland Mission; 2024

Danny Stockli, Cambria Reinsborough, Brian Reinsborough; Tailgate; 2024

Scott Tinker, Larry Faulkner, Peter Flawn, Bill Fisher, Jim Langham

Ashlee Siddall, Sage Turek; Tailgate; 2024

Claudia Mora; 2025

Mrinal Sen; 2025

Charlie Kerans; 2025

Raul Benavidez, Tiffany Hedayati, Ana Ramirez, Tamara Kahn Zissman, Shibu Mathukutty; 20th Anniversary; 2025

EVS 311; Upper Barton Creek; 2025

GEO660; White Sands, New Mexico; 2008

Tim Shin, Robbie Gries; Scholars Lunch; 2010

Jack Jackson

Katherine Jackson

GEO 660; 2005

Kristopher Darnell, Matthew Hiatt, Jasmine Mason, Max Daniller-Varghese, Miguel Cisneros, Colin McNeece; AGU; 2016

Fieldwork; Cuatrocienegas, Mexico; 2008

Sharon Mosher; Gone to Texas; 2019

Joanna Morgan, Sean Gulick; Chicxulub Mission; 2016

Dennis Trombatore; 2012

The Jackson School of Geosciences has thrived and grown in the last 20 years because of its talented and hard-working faculty and staff members, students, researchers, and the support of its alumni and friends. The cover of the 2025 *Newsletter* presents some of those people over the years alongside every *Newsletter* cover from 2005 to 2024.

Back Cover Images *(from top left)*

Bill Fisher and student; 2009

David Mohrig; 2016

Ernie Lundelius; 2009

Fieldwork; 2005

Bob Folk; 2004

Benjamin Keisling, Marcy Davis; Greenland Mission; 2024

Artwork of NASA Europa Clipper Mission

Claudia Mora; Tailgate; 2024

Ramon Gil, Susan Hovorka, Seyyed Hosseini, Vanessa Nuñez-López, Katherine Romanak; Greenman Award Ceremony, Melbourne, Australia; 2018

Earle McBride, Sharon Mosher; 2014

Hessa Patwa; 2025

Ann Molineux; 2003

Peter Flemings; Methane Hydrate Mission; 2023

Vibha Radhakrishnan; Carlsbad, New Mexico; 2024

Geeta Persad, Zong-Liang Yang, Sabiha Tabassum, Paola Passalacqua, Dev Niyogi; Lady Bird Lake, Austin; 2022

Demian Saffer; 2022

Fernando Rey; Patagonia; 2024

Ian Dalziel; South Georgia Island; 2008

Bella Gray, August Aalto, Lucia Bellino; GSEC Meeting; 2025

Jay Banner; Hot Science, Cool Talks; 2024

Scott Tinker, Mark Shuster, Michael Young, Jay Kipper; 2018

Jessie Maisano; AAAS Tour; 2018

Graduation; 2024

GEO 660; 2009

Duncan Young; Antarctica; 2017

Lorena Moscardelli; Core Research Center; 2025

Opposite Page Campus photo: Casey Dunn/UT; Dean Mora photo: Callie Richmond.

Friends,

As I watch our crack communications team assemble the annual *Newsletter*, I am always left a bit breathless by the amazing things that fill a year's time at this wonderful school! So, I am proud to share with you my sixth and final annual *Newsletter* as dean of the Jackson School of Geosciences. I will be stepping down at the end of my term on Jan. 31, 2026.

Leading this school has been the greatest honor of my career — and a heck of a lot of fun, too! My story is shared on page 25. While I will still carry on a few tasks in the geo-community, I look forward to returning home to northern New Mexico to share time with my husband Pete, hit some places on our bucket list, and hope that at least one of our five children chooses to procreate. As of the time of publication, we are still awaiting word on who my successor will be, but I am confident the new dean will be a top talent, ready to carry on our important work and lead us in new and exciting directions.

I am so proud of what the Jackson School leadership team has accomplished together during the past six years, including doubling our undergraduate enrollment. Many things came together to drive this growth: a flexible and modern new curriculum, investment in student research and classroom infrastructure, and a simply fabulous student affairs team. Young people are discovering that geoscience is critical to solving some of society's greatest challenges, and they want to be part of it. See the feature on page 47 about how our environmental science major is also part of this story.

I share my goodbyes with the "Guad Father" himself, Professor Charlie Kerans. Enjoy a look back at Charlie's career (page 57). Charlie mentored and led generations of geologists in the field, and he did pioneering work on carbonate systems and reservoirs. After 40-plus years of field work that required hiking, climbing, canoeing and diving, Charlie has entered a well-earned retirement. I hear he plans to do more hiking, climbing, canoeing and diving—and looking at more rocks!

To help weather the current storm surrounding federal funding for scientific research, the Jackson School is taking proactive steps to leverage our strengths to break out and lead in key research areas through our new Strategic Investment Plan. See the Q&A with Associate Dean for Research Michael Young on page 69 to learn more about it.

The Jackson School also celebrated its 20-year anniversary this year. A lot has changed over the years (page 37) but the mission remains the same: to pursue sustained leadership and the highest distinction in the geosciences. I feel privileged to have played my part in the school's still-young existence. Every day, I see colleagues, staff and students applying their talents, reaching for that goal and working to advance us, collectively. I have been so privileged to share this adventure!

Best wishes to all!

Claudia I. Mora

Claudia I. Mora, Dean

CONTENTS

The Kenilworth Member of the Blackhawk Formation near Green River, Utah. Photo: Peter Flemings.

Features

Research and News

The *Newsletter*, a tradition since 1950, is published annually for friends and alumni of the Jackson School of Geosciences at The University of Texas at Austin.

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UT Blasts Off for Europa

Research led by **Don Blankenship,** research professor

University of Texas Institute for Geophysics

On Oct. 14, 2024, NASA's Europa Clipper successfully launched atop a SpaceX Falcon Heavy rocket bound for Jupiter's moon Europa. Among the instruments the spacecraft is carrying is a moon-imaging radar sounder named REASON that was developed by researchers at the University of Texas Institute for Geophysics. Based on technology that researchers developed to peer inside Earth's ice sheets, REASON will play a major role in determining whether Europa can, or ever did, support life.
More: jsg.utexas.edu/news/reason

Photo: NASA.

1

Asteroid Impact Spurred Life's Recovery

Research by **Sean Gulick,** research professor; **Chris Lowery,** research associate professor

University of Texas Institute for Geophysics; Department of Earth and Planetary Sciences

About 66 million years ago, an asteroid slammed into the planet, wiping out all non-avian dinosaurs and about 70% of marine species.

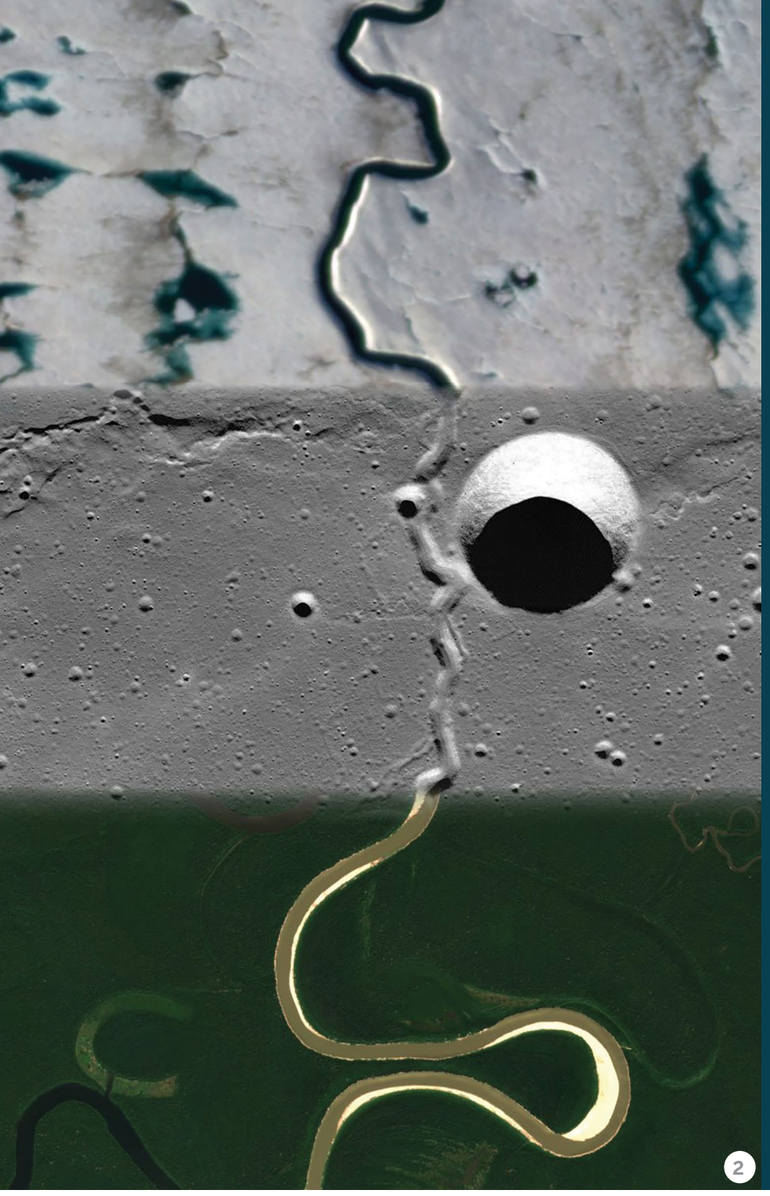
But the crater it left behind in the Gulf of Mexico was a literal hotbed for life, enriching the overlying ocean for at least 700,000 years, according to scientists. They discovered that a hydrothermal system created by the asteroid impact may have helped marine life flourish at the impact site by generating and circulating nutrients.

The research hinges on the chemical element osmium, which is associated with asteroid material. By analyzing core samples of the crater's sediments, the researchers found evidence that osmium from the buried asteroid was being continuously released into the Gulf of Mexico by submarine hydrothermal activity.

They found that when the hydrothermal system was releasing this osmium, the plankton in the area were a type that is associated with high-nutrient environments. When the osmium returned to pre-impact levels, the plankton were associated with low-nutrient environments, indicating that the ecosystem was no longer being sustained by nutrients from the hydrothermal system.

Research published April 2025 in *Nature Communications*

1. Research Professor Sean Gulick carries a core sample from the Chicxulub crater during a 2016 mission to the site that he co-led. Photo: Jackson School.



Rivers Bend to Their Own Beat

Research by **Juan Vasquez,** B.S. 2024;
Mariel Nelson, Ph.D. 2025;
Tim Goudge, assistant professor

Department of Earth and Planetary Sciences

Whether it's rivers cutting through earth, lava melting through rock, or water slicing through ice, channels all twist and bend in a seemingly similar back-and-forth manner. But a new study has discovered that channels carved by rivers actually have curves distinct from those cut by lava or water through ice.

The distinction could eventually help determine what is shaping the geology of channels on other planets.

The exact mechanism that drives the shape of these bends is not certain, but the researchers point to the relationship between the topography of the channel and the fluid's flow within it.

In rivers, the centrifugal force pushes water faster around the outer edges of the channel's bends and more slowly along the inner edges. This erodes the outer edge and deposits sediments along the inner edge. Volcanic and ice channels, on the other hand, are eroded thermally, through melting. And because they do not deposit sediments like rivers do, the only change that occurs in these channels is along the outer edge of a bend, making their curves comparatively smaller than those in rivers.

The research was led by an undergraduate student, Juan Vasquez, who analyzed thousands of bends in rivers and ice channels on Earth and volcanic channels on the moon.

Research published March 2025 in *Geology*

Liquid Core Explains Mars' Lopsided Magnetic Field

Research by **Chi Yan,** research associate

University of Texas Institute for Geophysics

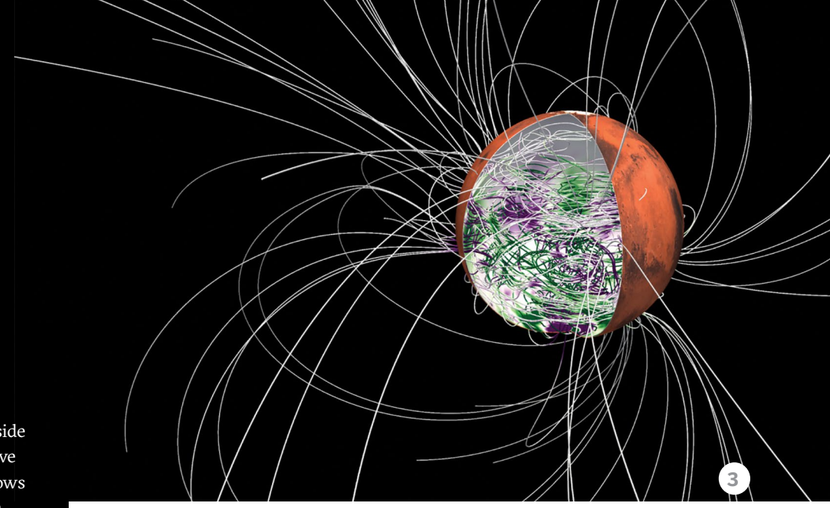
It's long been a mystery why signs of Mars' ancient magnetic field show up on only one side of the planet. Geophysicists think they may have solved the problem with a new model that shows that a fully molten core could have caused a lopsided magnetic field on early Mars.

Until now, most studies of early Mars relied on magnetic field models that gave the red planet an Earth-like solid inner core.

The researchers were inspired to simulate a completely liquid core after NASA's InSight lander found that Mars' core was made of lighter elements than expected. That means the core's melting temperature is different from Earth's and therefore quite possibly molten. And if Mars' core is molten now, it almost certainly would have been molten 4 billion years ago when Mars' magnetic field is known to have been active.

To test the idea, the researchers ran supercomputer simulations of early Mars with a liquid core making the northern half of the mantle hotter than the southern. Because of the temperature difference, heat escaping from the core could do so only at the southern end of the planet, the flow of which was strong enough to drive a dynamo that generated a magnetic field.

Research published February 2025 in *Gephysical Research Letters*



2. A compilation of satellite images of sinuous channels. From top to bottom: an ice channel in Greenland, a volcanic sinuous rille on the moon. the meandering Juruá River in Brazil. Photo: Tim Goudge.
3. Computer simulation of a one-sided magnetic field on early Mars. Photo: Ankit Barik/Johns Hopkins University.
4. Left to right: Ariel, Uranus' fourth largest moon, which is thought to be made of equal parts rock and ice. The planet Uranus. Photo: NASA/JPL-Caltech.

Swaying Moons Could Mean Hidden Oceans

Research by **Doug Hemingway,** research assistant professor

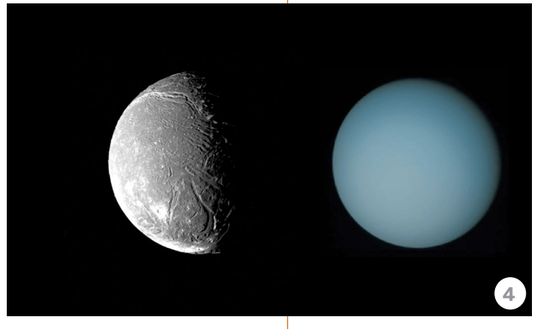
University of Texas Institute for Geophysics

When NASA sends another spacecraft to Uranus' moons, wobbles in their orbit could reveal whether they are hiding liquid water oceans beneath their icy surface.

The NASA mission is still in an early planning stage, but researchers are already building a new computer model that could be used to detect oceans beneath the ice using just the spacecraft's cameras.

The new computer model works by analyzing small oscillations in the way a moon spins as it orbits its parent planet. From there, researchers can calculate how much water, ice and rock is inside. Less wobble means a moon is mostly solid, while a large wobble means the icy surface is floating on a liquid water ocean. When combined with gravity data, the model can compute the ocean's depth as well as the thickness of the overlying ice.

Research published September 2024 in *Geophysical Research Letters*



Closing the Loop on Martian Water Cycle

Research by **Mohammad Afzal Shadab,** Ph.D., 2024;
Eric Hiatt, Ph.D., 2025; **Marc Hesse,** professor

University of Texas Institute for Geophysics; Department of Earth and Planetary Sciences; Center for Planetary Systems Habitability; Oden Institute

Billions of years ago, water flowed on the surface of Mars. But scientists have an incomplete picture of how the red planet's water cycle worked.

Two students have developed a computer model that helps sharpen that picture, calculating that it took from 50 to 200 years for water to sink from the Martian surface to the aquifer, which is about a mile underground. On Earth, where the water table in most places is much closer to the surface, the same process typically takes just a few days.

The researchers also determined that the amount of water caught between the surface and the aquifer significantly reduced the water supply at the surface.

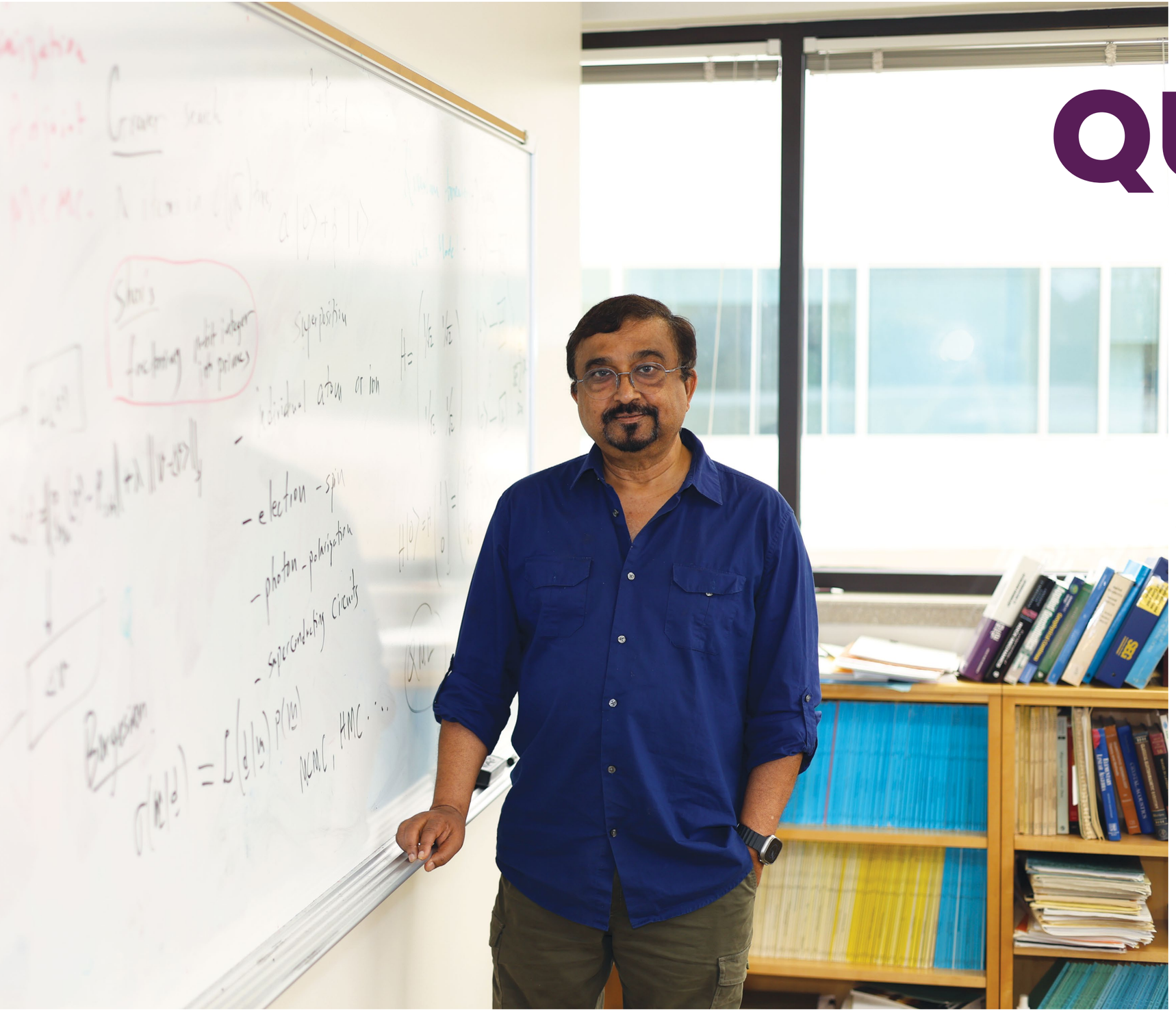
The findings add to an alternative picture of early Mars. Instead of being a wet world, Mars likely did not have much water evaporating into the atmosphere and raining down to refill oceans, lakes and rivers.

Research published April 2025 in *Geophysical Research Letters*

QUANTUM SHIFT

BY CONSTANTINO PANAGOPULOS

Real-time seismic imaging may seem like science fiction, but Mrinal Sen has other ideas.



Professor Mrinal Sen. Photo: Jackson School.

Imagine this: It's 2035 and the U.S.'s new national science ship is on a mission to investigate signs that a massive earthquake is about to hit the Pacific Northwest. Below deck, gigabytes of data from a dozen sensors pour into the vessel's quantum computer.

On the science deck, a 3D image of Earth's subsurface instantly reveals the fault and its surrounding geology. The scientists instruct the crew to bring the ship closer to a region of high tectonic strain. They quickly conclude it's a false alarm: a seafloor bulge detected by early warning satellites was just a passing slow tremor, nature's safety valve alleviating the tug of war between tectonic plates.

The science vessel turns to its next mission. In Galveston, Texas, a drilling ship is being fitted to tap geologic hydrogen. The quantum science vessel will sail ahead and find the undiscovered reservoirs.

Back in the present, this scenario seems like a distant dream. But at least one part of it could be closer to reality than many think.

Quantum computing has made important recent advances. Although the technology still has hurdles to overcome, its supporters say that the quantum computing revolution, especially in big data crunching (think materials science, cancer research, climate modeling and, of course, seismic imaging), is just around the corner.

Mrinal Sen, a geophysics professor at The University of Texas at Austin, has tasked himself with getting the geosciences ready for the bright quantum future. At the top of his agenda is to adapt seismic imaging algorithms to work with existing quantum computers—algorithms that will be the foundation of real-time seismic imaging, long the holy grail of seismic research. He also wants to establish a new center of quantum computing research for the geosciences and attract industry support to fund the effort.

The nascent technology is not without its detractors. In early 2025, after Sen announced that he'd be leading a workshop on quantum computing in geophysics, his inbox filled with emails claiming that the technology isn't mature enough and that his workshop is too soon.

Sen disagrees. Having correctly predicted the transformative impact on the geosciences of neural networks, parallel computing, machine learning and artificial intelligence, Sen has good reason to be confident that the time to introduce quantum computing to the geosciences is now.

"(Quantum) programming is a different way of thinking to classical computing," Sen said. "It's time that we start to investigate the applicability of our algorithms to quantum computing so that we can understand what the issues are in doing that."

There's still some way before the technology is ready for geoscientists to run their large-scale algorithms, but Sen wants people working on and talking about the problem now so that the science is ready to make the most of the quantum future.

A SEISMIC PROBLEM

The goal of seismic imaging is to turn vibrations in the Earth into an image of what lies underground. The image can then be studied to illuminate earthquake faults, oil reserves, mineral deposits, underground carbon storage locations, groundwater, or simply geology. It's the bread and butter of many researchers at the University of Texas Institute for Geophysics (UTIG), where Sen works.

But it's not an easy task. Earth's subsurface is noisy and unpredictable. Constructing a useful seismic image typically requires many seismic waves recorded from many sources and at many strengths and wavelengths. That's terabytes of information, all of which need to be pruned, cleaned of noise and balanced for uncertainty.

Next, scientists analyze the seismic waves' strength, speed and frequency and match them against a model of the Earth, adjusting the model bit by bit to deduce what the waves passed through on the way.

It's a lot of painstaking mathematics to find the best probable solution from many alternatives. A seismic image of the subsurface is not an image in the traditional sense; it's just the likeliest picture of the subsurface after all other possibilities have been eliminated.

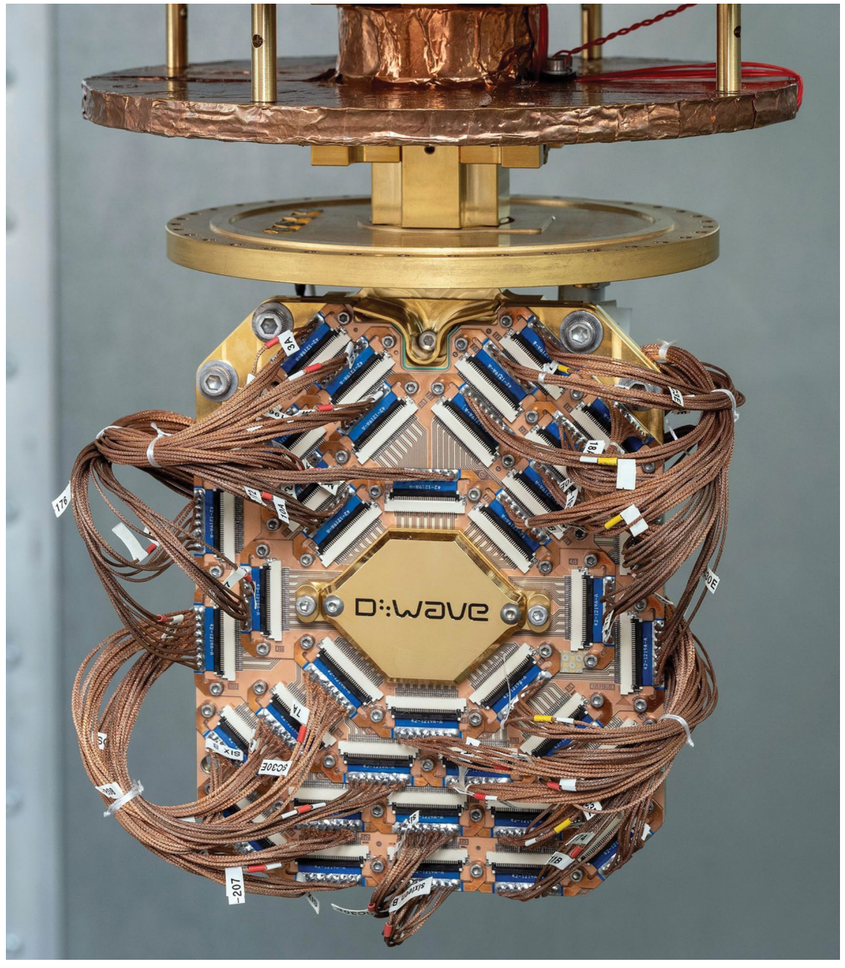
Even with supercomputers such as Lonestar6 at the Texas Advanced Computing Center, which UTIG's researchers frequently make use of, a single seismic image can take weeks of analysis and hundreds of supercomputer hours to generate.

But what if you had a computer that could do the calculations instantly?

In 2024, Sen and colleagues at Stanford University ran a basic seismic imaging problem on a Canadian quantum computer called D-Wave.

The machine solved the problem and generated an outline of the likeliest subsurface characteristics in the image. The problem and data involved were both very small, but the solution generated was a milestone in computational geophysics. More importantly, it worked. The test was proof that the algorithms used for seismic imaging can be mapped onto the bizarre world of quantum mechanics.

"Programming for quantum computers is completely different because nothing is certain. Everything is probabilistic," Sen said. "I find that kind of fun."



Opposite page: A quantum processing unit from D-wave's Advantage2 quantum computer. Photo: D-Wave.

The quantum mechanics behind quantum computers give them key advantages over traditional computers when it comes to solving certain problems. A quantum computer's units of information, called qubits, are not just 1s or 0s—they are simultaneously 1, 0, and (when looked at probabilistically) everything in between. Qubits are also entangled, which means that a quantum processor carrying out operations on its qubits can act on them all at once.

These two properties are what make quantum computing so exciting for big data crunching—because they allow quantum computers to perform multiple probabilistic calculations simultaneously.

"It has the advantage of doing massive parallel computations," Sen said.

That advantage, which scales exponentially the more qubits are working together, means quantum computers will theoretically be much faster at processing the vast amounts of data generated by seismic imaging.

"For real-time imaging, we have to be able to read a huge volume of data—which is a bottleneck right now," Sen said.

But some quantum computers such as D-Wave have another trick that lets them quickly tackle probabilistic problems. These machines use a technique that lets the qubits pick out the best answer by finding the problem's lowest energy state.

It's called quantum annealing, and it works like this: Imagine you are trying to find the lowest point on a very long graph with many dips and peaks, but you can see only a very small portion at a time. In conventional methods, an algorithm takes a starting point, computes part of the graph, then decides whether to keep going. Quantum annealing is like a cheat code: It tunnels through the graph until it can't reach a lower point—the problem's lowest energy state—saving a lot of unnecessary computations.

It's a technique that's especially promising for seismic imaging, where data is particularly noisy and needs to be cleaned up to show an optimized image.

A QUANTUM SOLUTION

How well quantum computers will work in real-world settings is difficult to pinpoint. The D-Wave tests (and similar tests on quantum emulators) were successful, but the experiment was not designed to show how much quicker the quantum processor was at solving the problem. According to Sen, though, it needn't be.

"Not every algorithm will work on quantum machines, but for those that do, it will be like night and day," he said. "This will really be a quantum leap."

The signs from those developing the technology are encouraging. In a recent announcement, Google claimed its latest quantum chip, Willow, had performed calculations in a few minutes that would take the fastest supercomputers longer than the age of the universe to complete. Critics pointed out that the benchmark tests, while impressive, did not resolve the technology's wider problems, including the reliability of its results, which still fell far short of traditional computers.

Putting quantum machines to use isn't as easy as swapping out a chip. Quantum processors are incredibly delicate, and keeping their qubits in a quantum state gets trickier the more you put on a chip. They're also very susceptible to electromagnetic noise, which causes them to give unpredictable answers. These obstacles have kept commercial quantum computing a decade over the horizon for more than 30 years.

Sen, however, is optimistic that the technology is finally learning to overcome the worst of those obstacles.

"When people say quantum computers are not there yet, it's the correct statement for today," he said. "But when I started my career 35 years ago, parallel computing in seismology was a dream. People thought that we'd never do large-scale computations like that. Look where we are now."

Today, parallel computing is the gold standard for processing seismic data, thanks in large part to sophisticated software developed by researchers, including Sen, that takes full advantage of the technology's benefits. Doing the same with quantum computing and seismic imaging would be a revolution in the geosciences.

"Programming for quantum computers is completely different because nothing is certain. ... I find that kind of fun."

-Mrinal Sen

With the initial tests in his pocket, Sen and researchers from Stanford and other leading U.S. universities are rallying support from geoscientists, physicists and computer scientists to establish a national institute for quantum computing in the geosciences.

The proposal is still awaiting a decision from the National Science Foundation (NSF), but even without NSF funding, Sen already has plans to advance quantum computing research for the geosciences. At UTIG, he's advising a graduate student, Sohini Dasgupta, on developing a quantum computing algorithm for monitoring underground storage of carbon dioxide. He's hired students and postdoctoral researchers to develop more advanced quantum algorithms for future seismic imaging tests. He's also tapping the institute's internal funding to kick-start more ambitious real-time seismic experiments. And at the Department of Earth and Planetary Sciences, where he teaches, Sen plans to introduce quantum computing concepts into his machine learning classes.

In the meantime, Sen and his collaborators are doing what they can to mobilize the scientific community and garner industry funds to keep momentum going.

Sen's vision is an industry-funded quantum computing research program at UT Austin. Whether that materializes depends much on how his research is received at conferences and workshops throughout the year. But Sen has every reason to be optimistic.

"We've had some good conversations with companies, and there's a lot of interest. There's an understanding that we've been doing this for years, that we know how to tackle these problems," Sen said. "It's not big money for them, but it will be good support for more students, and the long-term rewards of what we're doing really could be huge."

1

Closing an Evolutionary Gap With Zircons

Research by **Hector Garza,** Ph.D. 2025; **Elizabeth Catlos,** associate professor; **Julia Clarke,** professor

Department of Earth and Planetary Sciences

In 1984, an amateur paleontologist in Scotland found a remarkable specimen: a nearly complete fossil of what looked to be a lizard or salamander. This small creature, called *Westlothiana lizziae*, ended up being one of the earliest examples of a four-legged, land-dwelling animal that had evolved from ancestors that lived underwater.

However, despite its significance, the fossil lacked a precise age for decades. Thanks to Jackson School scientists who were willing to take a chance on a zircon analysis, it's now known that this lizard-like creature dates to 346 million years ago—helping to fill a hole in the fossil record known as Romer's Gap.

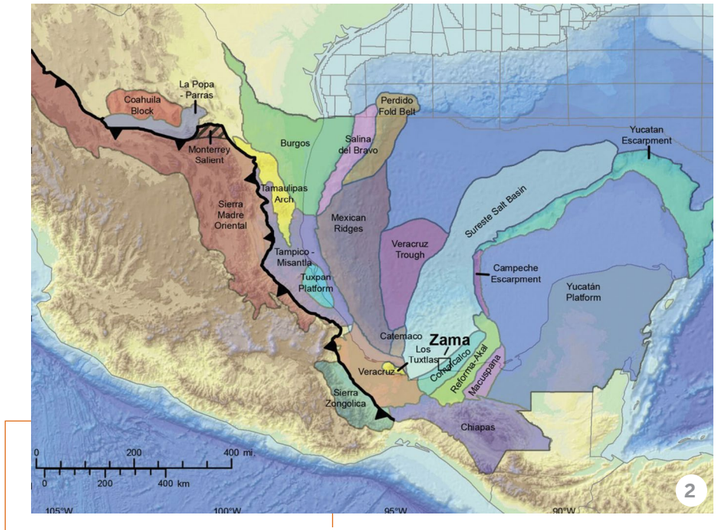
The gap spans from 360 million to 345 million years ago, a critical period when some lineages of water-dwelling life were growing lungs and making the transition to land. However, for reasons that scientists aren't exactly sure of, few fossils have been found from this time.

The site in Scotland where *Westlothiana lizziae* was discovered is a setting where zircons rarely form, and fellow scientists warned that the research might be fruitless. But the researchers got lucky: As mud cascaded down from nearby volcanoes, the flowing lava and debris eroded sediment that contained zircons. These zircons got swept into the same lake where the limestone that entombed the creature was forming.

Scientists X-rayed the rock sample and were able to extract zircons from the rock surrounding the fossils. From there, they conducted uranium-lead laser dating on the zircons to determine their age.

Research published April 2025 in *PLOS One*

1. A cathodoluminescence image of a zircon crystal unrelated to the samples in this study. The pit in the upper left of the zircon comes from the laser beam that excavated the material. Photo: Lisa Stockli/ Jackson School of Geosciences.



2

2. The Zama Basin is located off the coast of Tabasco in the Gulf of Mexico. Photo: Stockli et al., Basin Research.

Zama Basin Sands Made by Drive-by Microcontinent

Research by **John Snedden,** research professor; **Danny Stockli,** chair and professor

University of Texas Institute for Geophysics; Department of Earth and Planetary Sciences

An errant piece of a continental fragment that now makes up modern-day Central America played a key role in making Zama Basin the prospective deepwater oil field that it is today.

Researchers found that the high-quality sands that make up the oil reservoirs in the Zama Basin in the Gulf of Mexico came from a chunk of a granitic continent that tacked itself onto the mainland near Chiapas, Mexico, before moving on to become what is now Honduras and Nicaragua.

This landmass gave a small river—the 10 million-year-old equivalent of the modern day Grijalva River—that wound through the area a much larger drainage basin to supply sediments before heading to the sea. The sand flowed into the basin for about 1 million years—an extremely short timeframe, geologically speaking. When the microcontinent continued its journey, the river was cut off at its head and collapsed down to its original size.

The researchers used zircons extracted from exploratory wells to uncover the origin of Zama's sands. Zircons act as geologic fingerprints. Research conducted at the UTChron Lab revealed that they did not originate in Mexico. Permission to study the samples was provided by Talos, the oil company that found the Zama Basin—a discovery estimated to be equivalent to 600 million to 1 billion barrels of oil.

The two-part study was published in 2024 in *Basin Research*

3

4

Geochemistry Lab Expands Footprint

This year, the Department of Earth and Planetary Sciences modernized and expanded its capabilities in laser ablation and inductively coupled plasma mass spectrometry (ICP-MS), an analytical technique that can rapidly measure trace elements at very low detection limits.

Nate Miller, a lecturer and research scientist for the department, runs the lab, which moved to the Moffett Molecular Biology Building and is now called the Plasma Elemental Analysis CorE, or PEACE Lab. The space is outfitted with two state-of-the-art triple quadrupole ICP-MS instruments, each with a 193-nanometer laser system, among myriad other equipment. The space was also designed for teaching small classes, with hands-on learning in mind.

"It's a lab the Jackson School can be proud of and should be a key stop for touring by prospective students and visiting speakers and researchers," Miller said. "It is 580 steps from the JGB. Close in and far out!"

The ICP-MS lab moved from its previous home on the first floor of the Jackson School's JGB building, where it had been since May 2016.

5

Mantle Activity Set Course for Humanity

Thorsten Becker, professor

Department of Earth and Planetary Sciences; University of Texas Institute for Geophysics

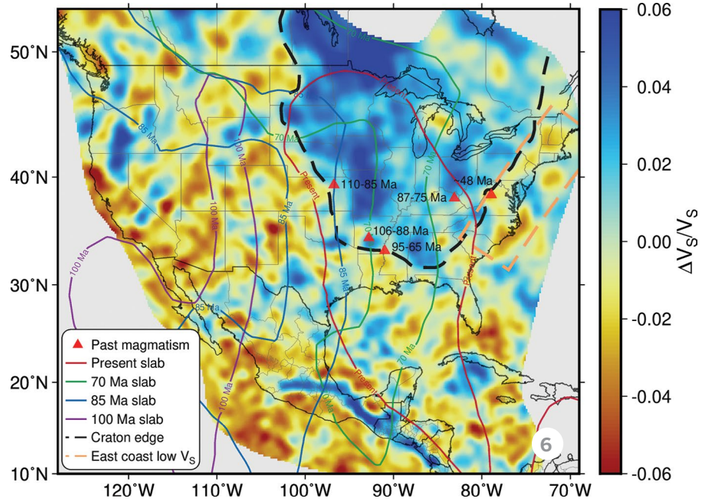
By bringing together previously published research with new models created at the Jackson School of Geosciences and the GFZ Helmholtz Centre for Geosciences, researchers found that a plume of hot rocks that burst from the Earth's mantle millions of years ago could be an important part of the story of animal and human evolution.

The story begins 50 million-60 million years ago, when a slab of rock sliding into the Earth's mantle created a "conveyor belt" for hot rocks to boil up in an underground plume that reached the surface some 30 million years later. This convective activity in the mantle, coupled with the collision of tectonic plates, created an uplift in land that contributed to the closing of the ancient Tethys Sea, splitting it into what is now the Mediterranean and Arabian Seas and creating a landmass that bridged Asia and Africa for the first time about 20 million years ago.

That land bridge connected Asia and Africa through what is now the Arabian Peninsula and Anatolia. This gradual uplift of land enabled the early ancestors of animals such as giraffes, elephants, rhinoceroses, cheetahs, and even humans, to roam between Africa and Asia—ending what was a 75 million-year-long isolation of Africa from other continents.

In this case, timing is everything. If it had been an additional million years before Africa and Asia were connected, the animals that made their way into and out of Africa could have been on different evolutionary paths. That includes the ancestors of today's humans. Several million years before the land bridge had completely closed, the primate ancestors of humans came to Africa from Asia. While those primates ended up going extinct in Asia, their lineages diversified in Africa. Then, when the land bridge fully emerged, these primates re-colonized Asia.

Research published April 2025 in *Nature Reviews Earth & Environment*



6

North American Continent is Dripping From Below

Research by **Junlin Hua,** postdoctoral fellow; **Stephen Grand,** professor emeritus; **Thorsten Becker,** professor; **Chujie Liu,** Ph.D. 2023

University of Texas Institute for Geophysics; Department of Earth and Planetary Sciences

Researchers have found that the underside of the North American continent is dripping away in blobs of rock—a phenomenon known as "cratonic thinning."

Cratons are very old rocks that are part of Earth's continents. They're known for their stability and ability to persist for billions of years. But sometimes cratons undergo changes that can affect their stability or that remove entire rock layers. According to the researchers, this is the first time that cratonic thinning may have been captured in action.

The discovery came from analyzing seismic data collected by the EarthScope project to create a seismic tomographic model of North America. This model revealed new details about the geologic processes happening in the crust and mantle underlying North America.

The dripping appears to be driven by the subduction of the Farallon Plate, an oceanic tectonic plate that has been subducting under North America for about the past 200 million years. The dripping is expected to eventually stop as the remnants of this plate sink deeper into the mantle.

Research published March 2025 in *Nature Geoscience*

3. Research scientist Nate Miller loads a sample into his lab's old laser ablation system. It's known as "Frankenstein" by the vendor because it has been completely reconstituted during the past 15 years. Photo: Robin Berghaus/Jackson School.
4. Nate Miller with the lab's new high-energy laser ablation system. Mass spectrometer instruments are on either side of this machine. Photo: Robin Berghaus/Jackson School.
5. A herd of elephants crosses a river in Chobe National Park, Botswana. Research suggests that convective activity in the Earth's mantle created a land bridge that influenced animal and human evolution. Photo: Getty Images.
6. A map showing the velocity of seismic waves passing through the Earth's crust. The North American craton (outlined in black dashes) has a high seismic velocity compared with its surroundings. Photo: Hua et al., *Nature Geoscience*.

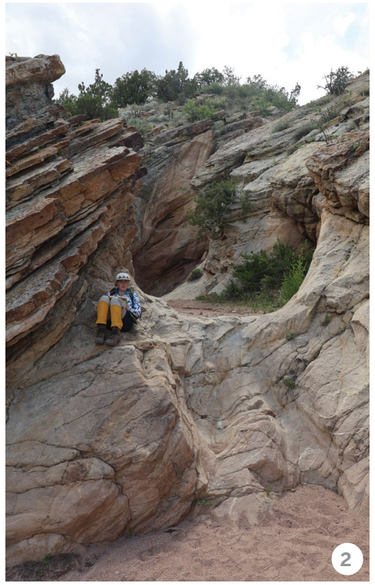
During the May term, 82 Jackson School students participated in the field-based GEO 660A and GEO 660B courses, traveling across the Southwest and Rocky Mountain regions. Sophomores in GEO 660A built core field skills through projects on Precambrian igneous and metamorphic rocks near Cañon City, Colorado, geologic mapping around Abiquiu, New Mexico, and basin analysis of clastic strata in Utah's Book Cliffs. Juniors and seniors in GEO 660B advanced to complex mapping and tectonic synthesis, with one group working near Cañon City and Moab, Utah, and another spanning Abiquiu, New Mexico, Utah, Nevada's Snake Range, and Arizona's Grand Canyon region. The courses together showcase the depth and range of field training that defines geoscience education at the Jackson School.

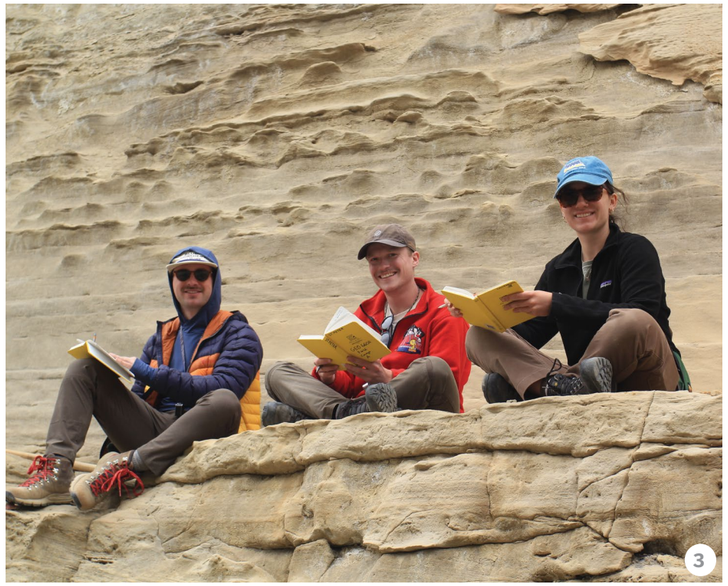
GEO660

FIELD GEOLOGY FIELD CAMP

1. Jade Garza canoeing on the Green River to explore the Kenilworth Member of the Blackhawk Formation in Utah.
2. Nicole Czwakiel among the rocks.
3. From left to right: teaching assistants Griffin Clevenger, Jack St.Peter and Emily Launderville in the Spring Canyon Member of the Blackhawk Formation in Utah.
4. From left to right: students Kaif Rehman, Louis-Raphael Daillet, Collin Smith and Abby Mcalanis locating their position on the geologic map of Utah in preparation for a mapping transect of the San Rafael Swell.
5. Students in GEO 660B group hiking near Cañon City, Colorado.
6. Assistant Professor Matt Malkowski in Arches National Park.

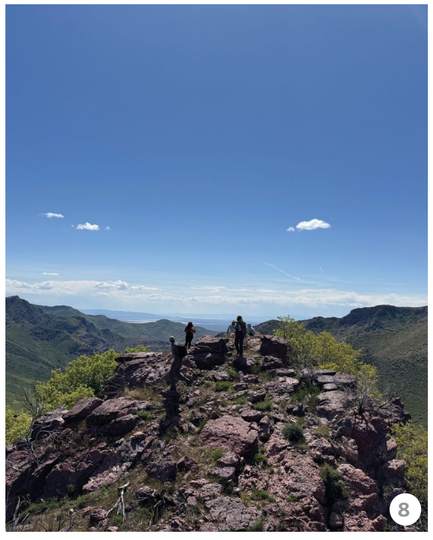
Photo Credits:
Peter Flemings: 1, 3, 6
Nicola Tisato: 2, 5
Matt Malkowski: 4





1. Students observing and measuring the Cañones Fault along the Red Wash Canyon during a mapping project near Abiquiu in northern New Mexico.
2. GEO 660B instructors Nicola Tisato (left) and Danny Stockli (cowboy hat) and TAs (left to right) Sage Turek, Megan Kerr and Nicole Czwakiel mapping in Temple Canyon, Colorado.
3. Students using the geologic map of central Utah to discuss their location and strategy for mapping along the San Rafael Swell.
4. Students getting ready to float the stratigraphy of the Book Cliffs along the Green River after a week of measuring and describing the Blackhawk Formation.
5. Students learning about extensional tectonics from instructor Brian Horton at the Horse Camp Basin in eastern Nevada.
6. GEO 660A Group 2 photo at the Royal Gorge Canyon in Cañon City, Colorado, as they get ready to drive to New Mexico.
7. Class photo at Delicate Arch after studying the Delicate Arch relay fault system in Arches National Park in Moab, Utah.
8. Instructors Craig Martin and Brian Horton teaching students how to map large-scale structural geology in the Cañon Range, Colorado.

Photo Credits:
Miriam Barquero-Molina: 1, 6
Danny Stockli: 2
Matt Malkowski: 3, 4
Craig Martin: 5, 7
Madison Preece: 8



The 2025 Marine Geology and Geophysics Field Course returned to Port Aransas and spent eight days collecting and processing multichannel and single channel seismic data, multibeam bathymetry, sediment grab samples, and sediment cores. After returning to Austin, students spent a week and a half interpreting and integrating these data before a final presentation. Additions this year included new geochemical analyses provided by RohmTek (a company founded by MG&G Field Course and Jackson School alumnus Nathan Ganser) and a trip to Mud Island, led by Professor David Mohrig, to take a transect of cores across a recently closed pass through the island.

MG&G

MARINE GEOLOGY AND GEOPHYSICS FIELD CAMP

1. Mia Paz (front), Lance Kessler (back left) and Brendan Bishop (back right) take a sediment core in a mangrove marsh on Harbor Island near Port Aransas.
2. Alex Brosselin (left) Alan Stone (center left) Mia Paz (center right) and Jonas Haug (right) examine the core that they took on Harbor Island in Port Aransas.
3. Jonas Haug measures the salinity of a water sample from Redfish Bay using an optical refractometer.
4. From left to right: Brendan Moehringer, Milo Stephenson, Jonas Haug, Alan Stone, and August Aalto taking a sediment core on Mud Island in Aransas Bay.
5. From left to right: Austin Morrell of RohmTek with students Gabriel Ojo, Vince Ingersoll, Milo Stephenson, Emma Martin, Rob Nikirk (RohmTek), August Aalto, Brendan Moehringer, and Lucero Tunjar Cruz. They're pictured on the R/V Curt Johnson on Copano Bay.
6. The class takes a sediment core on Mud Island in Aransas Bay.

Photo Credits:
Chris Lowery: 1, 2, 3, 4, 5
John Goff: 6

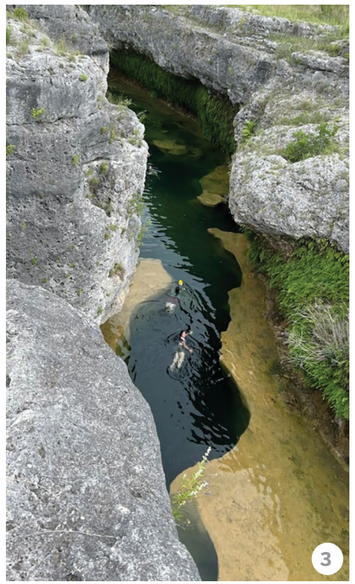
The 2025 Hydrology Field Camp conducted three different studies in Central Texas by collaborating with water agencies in the area. The class worked with the City of Austin to examine urban contamination in groundwater springs, conducted surface water-groundwater interaction studies on the Blanco and Guadalupe rivers with Comal and Hays County groundwater conservations districts, and studied aquifer recharge processes with the Edwards Aquifer Authority. Their work provided useful insight to all of these organizations while teaching the fundamentals of hydrologic science.

HYDRO

HYDROLOGY FIELD CAMP

1. Students from Hydro Field Camp, staff from the City of Austin, and UT instructor Marcus Gary (in burnt orange) measuring the water flow from Barton Springs in downtown Austin.
2. Doctoral student Josiah Sananda collecting a sample from the vadose zone monitoring system.
3. Hydrology Field Camp students exploring a narrow canyon along the Blanco River in western Hays County.
4. Hawkins Borer conducting electromagnetic geophysical surveys at the White Family Outdoor Learning Center.
5. From left to right: Sydney Libbing, Fernando Pagan and Talita Gomes running a Guelph infiltration experiment.
6. Madison Fail (left) and Brooklyn Douglass taking infiltration measurements at the White Family Outdoor Learning Center.

Photo Credits:
Ebony Williams: 1
Anton Caputo: 2, 4, 5, 6
Marcus Gary: 3



New Model for Predicting Landslides

Research by **Demian Saffer,** director and professor

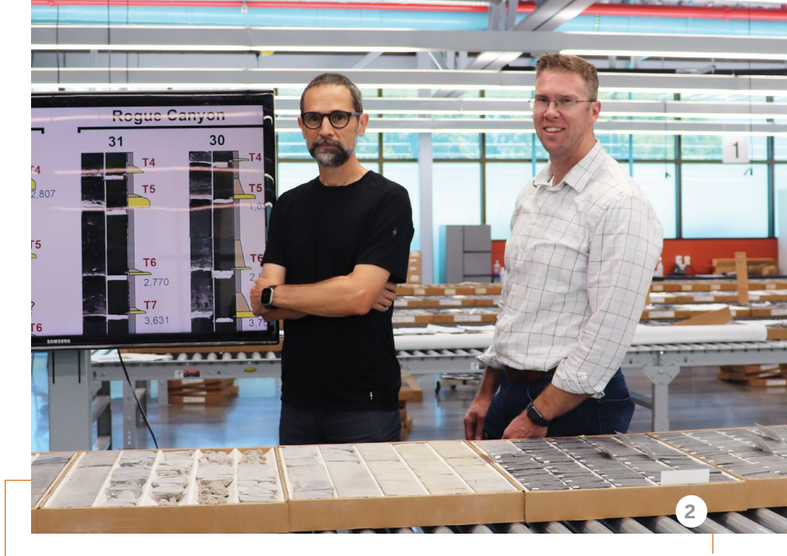
University of Texas Institute for Geophysics; Department of Earth and Planetary Sciences

Landslides are a perennial threat in California. Now, researchers studying two large Northern California landslides think they've found the key to predicting landslide motion hidden in the very rocks where they happen. And it's thanks—in part—to earthquake science.

The researchers found that much of the physics and geological factors behind California's earthquakes and landslides are the same. By applying earthquake rules to landslides, the researchers believe they have a technique that can predict how easily—and how fast—a surface will slide when rainfall increases.

The technique involves analyzing the rocks that are found along the California Coast Ranges, where landslides frequently occur. The researchers found that when the rock is clay-like and soft, the land surface moves easily but slowly, shifting a few inches or feet over a matter of weeks. Harder rocks, however, are less able to move, allowing strain to build, and leading to faster, more catastrophic landslides when the earth does finally fail.

Research published in October 2024 in *Science Advances*



Algorithm Raises Questions About Cascadia Earthquake Record

Research by **Jacob Covault,** research professor; **Zoltán Sylvester,** research professor

Bureau of Economic Geology; Department of Earth and Planetary Sciences

The Cascadia subduction zone in the Pacific Northwest has a history of producing powerful and destructive earthquakes that have sunk forests and spawned tsunamis that reached the shores of Japan.

Figuring out the frequency of earthquakes—and when the next "big one" will happen—is an active scientific question that involves looking for signs of past earthquakes in the geologic record.

However, new research is calling into question the reliability of one earthquake record—a type of geologic deposit called a turbidite that's found in the strata of the seafloor.

The researchers analyzed a selection of turbidite layers from the Cascadia subduction zone dating back to about 12,000 years ago with an algorithm that assessed how well turbidite layers correlated with one another.

They found that in most cases, the correlation between them was no better than random. Since turbidites can be caused by a variety of phenomena, and not just earthquakes, the results suggest that the turbidite record's connection to past earthquakes is more uncertain than previously thought.

The results don't necessarily change the estimated earthquake frequency in Cascadia, which is about every 500 years. However, they do highlight the need for more research.

Research published June 2024 in *GSA Bulletin*

1. Rockslide on California State Route 70 in the Feather River Canyon on Oct. 24, 2021. Photo: Scott Tikalsky, California Department of Transportation.
2. Research Professors Zoltán Sylvester (left) and Jacob Covault in the core viewing facility at the Bureau of Economic Geology. An algorithm they developed for correlating turbidites in geologic cores is raising questions about the earthquake record of Cascadia. Examples of turbidites from Cascadia are shown on the screen behind them. Photo: Jackson School.

Scientists Capture Slow-Motion Earthquake in Action

Research by **Joshua Edgington,** doctoral student; **Demian Saffer,** director and professor

University of Texas Institute for Geophysics; Department of Earth and Planetary Sciences

Scientists for the first time have detected a slow slip earthquake in motion during the act of releasing tectonic pressure on a major fault zone at the bottom of the ocean.

The slow earthquake was recorded spreading along the tsunami-generating portion of the fault off the coast of Japan, behaving like a tectonic shock absorber.

Slow slip earthquakes are a type of slow-motion seismic event that take days or weeks to unfold. They are relatively new to science and are thought to be an important process for accumulating and releasing stress as part of the earthquake cycle. The new measurements, made along Japan's Nankai Fault, appear to confirm that.

This breakthrough research was made possible by borehole sensors that were placed in the critical region far offshore, where the fault lies closest to the seafloor at the ocean trench.

The slow slip earthquake, captured by the team's sensors in the fall of 2015, travelled along the tail of the fault—the region close to the seafloor where shallow earthquakes can generate tsunamis—easing tectonic pressure at a potentially hazardous location. A second slow tremor in 2020 followed the same path.

Research published June 2025 in *Science*

Real-Time Soil Moisture Data Now Possible

Research by **Hassan Dashtian,** research assistant professor; **Michael Young,** associate dean and research professor; **Bissett Young,** project manager; **Ashraf Rateb,** research assistant professor

Bureau of Economic Geology

Soil moisture data provides key insights into weather and climate patterns, flooding potential, wildfire risk and agricultural production. But it has always been a few days behind. Now, for the first time, researchers at the Bureau of Economic Geology have changed that, capturing real-time soil moisture data.

The researchers developed a model that integrates advanced machine learning techniques and different data sources. This includes data from NASA's Soil Moisture Active Passive (SMAP) satellite and the Texas Soil Observation Network (TxSON), which has field-based monitoring stations across the state.

The approach uses the data to generate accurate, real-time estimates of soil moisture. The researchers tested their methods in a 56,000-square-kilometer area that includes Houston. They then compared their real-time estimates with actual data released by NASA.

Accurately estimating real-time soil moisture levels is a complex, yet crucial task, especially in areas prone to natural soil moisture-related hazards, such as fire, flood and drought.

Research published December 2024 in *Journal of Hydrology*

UT Team Advances to XPRIZE Wildfire Finals

Research by **James Thompson,** research assistant professor; **Ashley Matheny,** associate professor

Bureau of Economic Geology; Department of Earth and Planetary Sciences

A team of scientists and engineers from The University of Texas at Austin is one of 15 semifinalists to move on to the next stage of XPRIZE Wildfire's $5 million Autonomous Wildfire Response Track.

Researchers from the Jackson School of Geosciences and UT Cockrell School of Engineering have teamed 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 detect and contain wildfires within minutes of ignition.

The XPRIZE Wildfire operations team will travel to each semifinalist team location for in-field testing.

The team—called FLARE-X—uses several types of uncrewed aerial vehicles to detect and suppress fires. The team's solution involves: 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.

What's Driving Permian Basin Earthquakes?

Research by **Peter Hennings,** research professor

Bureau of Economic Geology

A collection of published papers offers the most detailed and comprehensive breakdown yet of how water injected into the Permian Basin during oil and gas operations is changing subsurface pressures and causing earthquakes.

The Permian Basin in West Texas is the country's most prolific energy-producing region, accounting for more than 40% of the nation's oil production and about 15% of gas production. However, energy production has caused earthquakes and other challenges in recent years, as oil and gas operators now manage about 15 million barrels of produced wastewater each day. This briny water comes to the surface as a by-product of energy production. Most of it is disposed of by being pumped back underground.

The new work is a synthesis of the geology of the Permian Basin, with a particular focus on the Midland Basin, and how its subsurface geology is interacting with injected water over time. In addition to offering a detailed explanation of the issue, the papers include information that oil and gas operators and regulators can use to reduce seismicity and associated hazards.

Research published December 2024 in *AAPG Bulletin*

3. Sensors and observation instruments being lowered into a borehole off the coast of Japan nearly 1,500 feet below the seafloor during an International Ocean Discovery Program mission in 2016. Photo: Dick Peterse/ScienceMedia.nl.
4. Members of the FLARE-X team celebrate successful flight testing in April at the Texas A&M RELLIS Flight Test Facility. Photo: Cockrell School of Engineering.

CHANGE AGENT

After six years leading the Jackson School of Geosciences, Dean Claudia Mora is leaving behind a stronger and more cohesive institution.

BY ANTON CAPUTO

When Claudia Mora took over the reins of the Jackson School of Geosciences, she was primed for a challenge that may have seemed unenviable to others.

"How can you take something that's already very good and make it even better?" she remembers thinking. "It seemed like a really fascinating management challenge. I was so excited."

Mora had a lifetime of experience that positioned her well for the job: a long and successful career in academia running her own lab as a professor and department head at the University of Tennessee, Knoxville, followed by an equally successful career at Los Alamos National Laboratory, where she honed her skills as a line manager in the Earth science and chemistry divisions, working her way up to deputy division leader.

She wasn't looking to leave Los Alamos, but said she jumped at the chance when called about the opportunity to apply. The role of dean at the Jackson School seemed like the perfect pinnacle to her career. She hit Austin raring to go and started getting to know her new job, her new city and the Jackson School.

And then EVERYONE went home.

Mora officially started her role as dean on Feb. 1, 2020, during those uncertain days when the COVID-19 virus was first making news across the country. By March 17, as the steady drip of news became overwhelming, then-UT President Gregory L. Fenves announced that students would not return from spring break and all classes would be moving online for the remainder of the semester.

So, instead of getting to know staffers, faculty members and students, Mora began her term leading the school through the monumental task of transitioning to virtual classes, communicating the new reality to students, and preparing for a whole new way of teaching and operating the school.

"I didn't really have the opportunity to sit down and talk with people and develop comfortable relationships with them," she said. "It was a difficult way to start."

Still, over countless Zoom meetings and video messages, the Jackson School trucked along, reopening most of its labs under new protocols almost immediately and scrambling not only to educate students, but also to help them through the physical, emotional and financial challenges that the pandemic posed.

Opposite page: Dean Claudia Mora in the Holland Family Student Center. Photo: Callie Richmond.

Mora's term began with a colossal crisis thrust upon by the outside. Coincidentally, it is ending six years later in a similar manner, with deep cuts in federal science funding and rapidly changing federal priorities.

Despite these challenges, the Jackson School is on sound footing. During her six-year tenure, Mora has reshaped the school, pulling the three units that make up the Jackson School closer together, directing the focus of education and research toward solution-driven science, and revamping finances in a way that has the school ready for the future.

"We're not just on solid ground—we are very well positioned and prepared for what is going on right now," said Danny Stockli, chair of the Department of Earth and Planetary Sciences. "She created financial resilience. That's really an incredible accomplishment."

Above: Dean Claudia Mora in the Hamman Gem and Mineral Gallery. Photo: Callie Richmond.

LAND OF ENCHANTMENT

Mora wasn't born into geology, but she grew up in New Mexico, a place where its wonders are ever present. She loved the outdoors as a child, but not really rocks or geology specifically. Her introduction to the science was in high school when her sister, who was going to college to be a geologist, dragged her along on a mapping assignment. Mora spent the time chasing a gecko and trying to avoid snakes. At the end of the day, her sister showed her the geological map she had created.

"I realized you could actually look at rocks and conceive of their three-dimensional origin and describe that story," she said. "I really found that interesting."

The experience didn't quite convert Mora to geology, but it did prompt enough interest for her to choose it to meet her lab science requirement when she attended the University of New Mexico as an undergrad (or as she likes to call it: UNM, "University Near Mom").

She was originally an English major and aspiring poet, but geology eventually hooked her, and she changed her major. From there, Mora went to Rice University for her master's and then the University of Wisconsin-Madison (UW) for her doctorate. She worked in mineralogy, metamorphic petrology and stable isotope geochemistry. Pursuing this kind of disciplinary diversity was driven into UW students, Mora said. And it's a lesson that stuck with her for her entire career.

"Breadth is something to be valued in geosciences," she said. "Being able to work across different parts of the science is important, and it gave me a lot more opportunities when looking for jobs."

When Mora landed on the faculty at the University of Tennessee, Knoxville, she was the first female professor in the geology department and would later be the first female department head. It was during that time she made a discovery that would shape the rest of her career—she really liked leadership and administration.

"I found that trying to enable the science of everyone around me was just as much fun as doing my own science," she said. "It's not for everyone. You have to really love other people's work and be driven to see that it goes forward as far as it can. You try to create an environment where people and the institution can be successful. I just enjoyed it a lot."

Mora loved her job at the University of Tennessee, but fate (in the form of her spouse's career) forced her hand—she found herself back in New Mexico as a spousal hire at Los Alamos. There, the lessons in scientific breadth learned in Wisconsin and her time in administration paid off, and she worked her way up to deputy leader of the chemistry division.

The combination of deep academic and national lab experience was critical to Mora's success, said Demian Saffer, director of the University of Texas Institute for Geophysics. Saffer came from Penn State University to take up his position only a few months before Mora started as dean. He was involved in hiring his new boss.

Saffer said he believes the Jackson School is fundamentally unlike any other geosciences or Earth sciences program in the country. Others may have strong research units, such as Lamont-Doherty Earth Observatory at Columbia University or Scripps Institution of Oceanography at the University of California San Diego. But the Jackson School is in a category all its own, with two major research units tied to a world-class academic department, all together led by a dean who reports directly to the provost. This uniqueness makes it a little difficult for outsiders to comprehend.

When Saffer saw Mora's background, he thought she was the best fit.

"Having somebody who could understand all that, I saw as a key part of leadership and really valuable for the school as a whole," Saffer said.

Six years later, he knows he was right. Mora's creative and "feisty" relationship with UTIMCO (The University of Texas/Texas A&M Investment Management Company) and UT's leadership has ultimately freed up more funds for the Jackson School that have helped researchers to do great science, Saffer said. He also admires how she has brought the three units together and made them more collaborative.

20 YEARS IN

The Jackson School formed 20 years ago when Jack and Katie Jackson left their fortune to the UT Geology Foundation, "investing in the future of a countless number of people at The University of Texas at Austin, who will study and will continue to learn of the geology, the earth sciences, and the resources and the environment of the Earth."

The gift was valued at $230 million, the largest donation at the time to a public university. It allowed UT to move the (then) Department of Geological Sciences from the College of Natural Sciences and combine it with two stand-alone research institutions, the University of Texas Institute for Geophysics and the Bureau of Economic Geology (also the State Geological Survey of Texas) to form the largest geosciences school in the country—a national powerhouse in the geosciences that now has a combined student body of more than 600.

In many ways the Jackson School is a unicorn. The school brought together three units with their own distinct business models, cultures and identities forged by long histories (century-long histories in the case of the department and bureau). Two of its three units—the Bureau of Economic Geology and the Institute for Geophysics—are devoted primarily to research, and many of their top scientists were historically not faculty members, a setup that perpetuated cultural differences between the units.

To help build a more collective identity, Mora supercharged a move that started under previous Dean Sharon Mosher: reclassifying 120 research scientists as research professors, making them professional-track members of the faculty.

Left: Claudia Mora and daughter, Eliana, in 2007 at the Valles Caldera, New Mexico. Photo: Claudia Mora.
Middle: Claudia Mora (third from left) with faculty members and student affairs staffers at the rollout of the climate system science major. The major is the first of its kind in Texas and one of the few in the country. Photo: Jackson School.
Below: The six institutions that shaped Claudia Mora's education and career. From left to right: University of New Mexico; Rice University; University of Wisconsin-Madison; University of Tennessee, Knoxville; Los Alamos National Laboratory; The University of Texas at Austin.

The change might seem like semantics, but Associate Dean for Research Michael Young said that bringing all research scientists under the faculty umbrella matters. Even though the Jackson School is one of the smaller schools at UT, it now has 60% of the research professors in the entire University.

Young said this change helped create equity among scientists and faculty. Many research scientists were already doing similar work as full faculty members: research, teaching and advising students. Like faculty members, research scientists were hired through competitive searches, met stiff requirements for promotion, led workshops and served on institutional committees. Still, students did not always recognize the wealth of expertise across the school that they could tap into. Having two of the three units at the J.J. Pickle Research Campus added to the challenge.

Young said Mora had to work hard to get the change approved by the provost and vice president for research, but she persevered. Young himself, who was an associate director at the bureau and a research scientist before taking his current role, is the only nontenured associate dean for research on UT's campus. He said Mora was convinced that he was the right person for the job and pushed hard for the nontraditional appointment.

"The reclassification was controversial, but I think that for me it's really important because I needed to have that equivalency," he said.

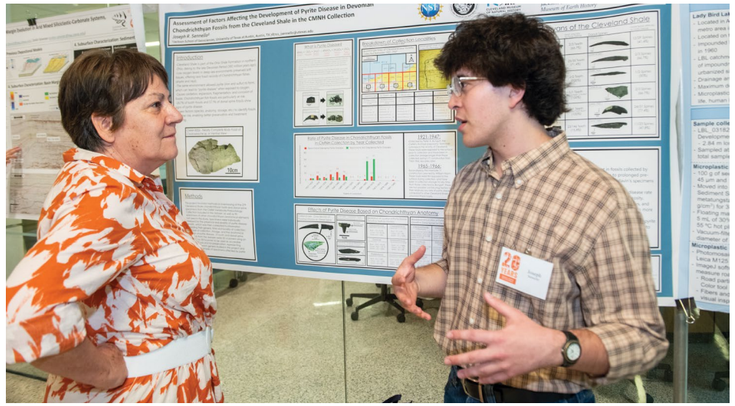
Saffer said the feeling reverberated throughout many parts of the school.

"It put people more on equal footing," he said. "It changed the sort of class distinction that I think was always lurking in the Jackson School, and so it changed the culture. It got buy-in from the research scientists at the units, and it made it easier for people like me to recruit top talent."

DEVIL IN THE DETAILS

If there was an upside for starting her term under the restrictions of social distancing, it was that it gave Mora time to pore over the school's unique and complex finances and become intimately familiar with the Jackson Endowment.

She worked closely on this with Elliott Pew, who was heading the Advisory Council's (AC) finance committee and would



go on to be the AC's chair. What Mora found was that most of the endowment was allocated to long-term recurring expenditures that left little room for short-term opportunities or flexibility.

"She noted pretty early on that there were some changes that we probably needed to make financially," Pew said. "But she didn't do that right away. She really wanted to make sure that she understood exactly what the situation was before she started putting stuff in place."

Pew said Mora wanted to invest the Jackson Endowment more strategically, spending less on overhead and long-term commitments and more on investments that could really advance the school and the science.

Mora said she felt the financial setup of the school contributed to the units competing for resources rather than working together. She actually stopped using pie charts in her school budget presentations to reject the notion that everyone needed to fight for their piece of the pie.

She then went through the difficult process of taking back 15% of the funding the school was allocating to the individual units so that more of the money could be used for strategic investment to move the entire school forward. Stockli said that was a difficult process for the department and other units, but that Mora was able to get everyone on board.

"That ended up being a really, really good move," he said. "The dean put constraints on us, and that made us first look at our own budget and figure out how we can do this and how can we actually turn this into a positive."

She also set up a "quasi-endowment," an interest-bearing account funded by the payout of the Jackson Endowment. Funds that once were held unspent for months—or even years—are now held in this "breakable piggy bank," generating additional funds for the school. One of the direct outcomes of this new liquidity is the newly launched Strategic Investment Plan aimed at helping the school increase its national leadership in critical research areas (see story, page 69). This effort came out of a planning retreat where Mora brought together research leaders from all the units to meld the strategic plans of each unit and identify key common strengths and common interests where they could work together to advance the research impact of the school.

"The process of doing that was pretty strong in terms of breaking down barriers, getting people better connected," Pew said. "It was about better communication, better sense of common purpose, that sort of thing. That really seems to be the pivotal event that kind of pushed the ball forward."

Mora was also able to negotiate additional University-funded development (fundraising) positions in recognition of the school's sizeable development allocation fees—money the school is required to pay to UT's central development office. This has resulted in a significant increase in charitable donations to the Jackson School.

And all the while, she has reshaped the school's leadership into a cohesive unit, Stockli said.

"One of the reasons why I signed up for the second term as the chair is just because she has assembled a very functional, goal-oriented, successful team that works

well together," he said. "She has shown incredible skill in terms of judging people and assembling really good people that work really well together."

Mora's eye for talent and institutional organization has done more than build a cohesive executive team. Under her leadership, the Jackson School has bucked the national trend of declining geosciences enrollment and has almost doubled undergraduate enrollment during her term, from 207 in 2020 to 411 in Fall 2025.

This increase has been attributed to many factors. They include a restructuring of the student services office, launching a new climate system science degree, and reworking the environmental science program (see story, page 47).

She also encouraged undergraduate participation in research by committing Jackson Endowment resources to match faculty contributions to student wages, creating more opportunities for student involvement in faculty research. Student pay was set at a level competitive with local service jobs ($19 per hour) so that students could work and learn, rather than flip burgers or mow lawns. The program has been very successful, and last semester more than 100 Jackson School undergraduates participated in research in one way or another.

MOVING ON

There's a cold reality about serving in a leadership position like dean, said Stockli.

"You're not there to make friends," he said. "You have to make tough decisions, and these tough decisions involve personnel. They involve finances. They involve all kinds of strategic and tactical decisions that don't always endear you to everybody. That can be isolating."

The fact that Mora thrived in the position really belied her social nature.

Chief Development Officer Andrew West said that Mora's natural personality and sense of humor, particularly her ability to balance the "rock talk" with fun, was a tremendous hit with alumni.

"She is very passionate about the students, and that really came across," he said. "She was always very present when meeting with folks. She was never distracted. They really appreciated that."

Stockli counts her as a close friend and mentor. And bureau Director Lorena Moscardelli saw firsthand what she described as a balance of professionalism and kindness when Moscardelli threw her hat into the ring to the lead the bureau (see story, page 91).

"Not every leader has the capacity to operate at that level," Moscardelli said, adding that Mora also endeared herself to her team by being a fierce advocate for the school and its students, faculty and staff.

"She's a force of nature," Moscardelli said. "Once her head is into something, she will push and kick and do whatever is needed to make it happen. People who work for her really appreciate that. I certainly do."

Perhaps there is no better illustration of Mora's approach to management than her answer to a question asked at her interview for the dean position: name your greatest accomplishment. The answer involves her second marriage.

"I thought about it some, and I said, 'Ten years ago, my husband and I blended a family of five teenagers between the ages of 13 and 19—five,'" Mora said. "And now, they love each other and they love us. I don't think I could have achieved anything more successful than that. The ultimate management problem, right?"

Mora said her next step is not set in stone. She will be president of the American Geosciences Institute next year. And she will return to her home in Taos, New Mexico—a thick-walled adobe built in the 1860s, and her fruit trees, which draw water from the Acequia Madre del Rio Chiquito. Being a parciante (member) of the acequia is how she and her husband, Pete Maggiore, have built community in Taos. She said she might add a horse to the family again, or even some miniature goats. Ultimately, she wants the freedom to pursue intellectual interests, to travel and to see her children—all five of them.

When she looks back at her time at the Jackson School, she sees her legacy as one of solidarity of three great units—the Department of Earth and Planetary Sciences, the Bureau of Economic Geology, and the University of Texas Institute for Geophysics—learning to live and work as one.

"The three pillars underneath the umbrella are now working together and talking together, dreaming together in ways they didn't used to," Mora said. "We couldn't do it all in six years, but we've made progress. I hope the next dean comes in and the team makes more progress. And maybe now, that'll be a bit easier to do."

The Do Epic Stuff Endowment has been created in honor of Claudia Mora. For more information, email awest@jsg.utexas.edu.

Opposite page: Undergraduate student Joseph Sennello discusses his research with Dean Claudia Mora at a poster session during the Jackson School of Geosciences 20th Anniversary Celebration.

Above: Claudia Mora dancing with husband Pete Maggiore to the music of Dale Watson at the Jackson School of Geosciences 20th Anniversary Celebration. Photos: Jackson School.

New Research Group Tackles Data Center Issues on Texas Power Grid

Research by **Ning Lin,** program manager and chief economist
Bureau of Economic Geology

The Jackson School of Geosciences has launched a new research consortium to help Texas capitalize on the influx of data centers coming into the state in a sustainable way.

Data centers are a booming industry across the state. However, the industry's growth, along with that of other large-load customers, could push peak electricity above what the power grid can supply.

The consortium — called Collaborative Optimization & Management of Power Allocation, Surface & Subsurface strategies (COMPASS) — is bringing together industry funders and scientific experts to pursue research. COMPASS is also collaborating with people living in the communities near data centers and large-load projects.

Its goal is to create a strategic development plan to help local communities reap the economic benefits of these growing sectors, while also mitigating negative impacts on the environment and Texas power grid.

Most recently, researchers published a white paper, "Sustainable Data Center Growth in Texas: Energy, Infrastructure, and Policy Pathways" that outlines major challenges associated with data centers and large-load development projects. These include energy, land and water use, community engagement and workforce development.

COMPASS is accepting applications from organizations to the consortium. The annual membership fee of $50,000 grants members access to forecasting reports, a web-based interactive visualization and mapping database, policy briefs and recommendations, student research and pilot programs, and research findings before they're published in peer-reviewed scientific publications.

For more information, contact Ning Lin at ***ning.lin@beg.utexas.edu***

To read the white paper, visit www.beg.utexas.edu/files/cee/Data_Center_White_Paper_BEG.pdf

1. A group tours the Texas Advanced Computing Center during a data center workshop hosted by the Jackson School in August. **2.** Ning Lin, the principal investigator of COMPASS, speaks at the dater center workshop. Photo: Robin Berghaus/Jackson School.

The Jackson School is Spanning the Energy Landscape

Jackson School of Geosciences researchers do so much work in the energy sphere that it is difficult to keep track of it all. The school has created a new web page to help highlight the work for easy reference. From oil and gas to geothermal, critical minerals and programs that help the state of Texas maximize its resources, it's all here.

Have a look and share with colleagues: ***energy.jsg.utexas.edu***

Scouring the Gulf Coast for Rare Earth Elements

Research by **Bridget Scanlon,** research professor;
Brent Elliott, research associate professor

Bureau of Economic Geology

The Bureau of Economic Geology is mapping coal and other resources in the Gulf Coast basin to help quantify the amount of rare earth resources that could be produced in the area. The effort is funded by the U.S. Department of Energy, which is looking for domestic sources of critical minerals. In addition to being an energy source, coal also contains critical minerals.

The team found that there are 83 billion metric tons of coal in the upper 300 feet of the Gulf Coast basin. Rare earth element concentrations are similar to the average levels found in the Earth's crust, with local hotspots up to 15 times higher. The rare earth elements can be extracted with environmentally benign weak acid because they are associated with organics in lignite coal. Their total value is $266 billion.

Researchers are also looking at red mud or bauxite residue at aluminum processing sites. At the Copano site near Corpus Christi they found rare earth elements valued at $3.4 billion. That value increases to $8.7 billion when scandium is included. The team is also exploring mineral sands that are a by-product of sand production that's used in hydraulic fracturing.

New Podcast Explores the Latest in Rare Earth Elements

Bureau of Economic Geology Research Professor Bridget Scanlon has launched a new podcast in partnership with the U.S. Department of Energy. ***www.beg.utexas.edu/rare-earth-elements-podcast***

Coal Ash Holds Huge Cache of Rare Earth Elements

Research by **Bridget Scanlon,** research professor; **Robert Reedy,** research scientist associate; **J. Richard Kyle,** professor emeritus; **Kristine Uhlman,** research scientist associate (retired)

Bureau of Economic Geology; Department of Earth and Planetary Sciences

Coal ash — the chalky remnants of coal that has been burned for fuel — has been piling up across the United States for decades. New research has found that this waste product contains enough rare earth elements to significantly bolster the national supply without any new mining.

Rare earth elements are a group of 17 elements that are essential for modern technology, but the United States relies heavily on imports for its supply, with about 75% coming from China.

Researchers found that there could be as much as 11 million tons of rare earth elements in accessible coal ash in the United States, which is nearly eight times the amount that the U.S. currently has in domestic reserves, according to the researchers. The research found that about 70% of the coal ash produced from 1985 to 2021 — a total of about 1,873 million tons — is potentially recoverable, with the material stored in landfills, ponds and offsite storage areas.

The study is the first to tally national coal ash resources. It estimates that $8.4 billion worth of rare earth elements could be extracted from the accessible supply.

Research published September 2024 in the *International Journal of Coal Science & Technology*

3. A pumpjack lifts oil from a well while windmills turn beside it.
Photo: Jackson School.
4. An ash landfill in Shrewsbury, Massachusetts.
Photo: Massachusetts Department of Environmental Protection.

5

New Technology Could Improve Oil Production and Carbon Storage

Research by **Abouzar Mirzaei-Paiaman,** research assistant professor; **Ryosuke Okuno,** professor

Bureau of Economic Geology; Cockrell School of Engineering

A new method for enhanced oil recovery is showing promising results in modeling studies—producing more oil, storing more carbon, and doing so more safely than conventional enhanced oil recovery methods.

Researchers looked at the performance of alternative carbon carriers—chemical compounds engineered to store larger quantities of carbon molecules in subsurface formations. They found that when these compounds are synthesized from carbon dioxide (CO_2), they can help optimize the transportation, utilization, and storage of this greenhouse gas.

They applied the technology to enhanced oil recovery scenarios and found that the new carbon carrier method recovered up to 19.5% more oil and stored up to 17.5% more carbon than conventional enhanced oil recovery methods.

Researchers converted the CO_2 into formates (like sodium formate or potassium formate), which are carbon-based molecules that can be synthesized from CO_2 gas. They found the formate compounds were more readily stored in the rock pores than a comparable quantity of CO_2 gas. Moreover, water-based solutions of formate compounds were also more viscous than CO_2, which helped improve efficiency when recovering remaining oil and storing carbon in the formation.

Research published July 2025 in *Energy & Fuels*

Optimal Incentives for Carbon Capture and Enhanced Oil Recovery

Research by **Abouzar Mirzaei-Paiaman**, research assistant professor; **Larry Lake**, professor; **Lorena Moscardelli**, director and professor

Bureau of Economic Geology; Cockrell School of Engineering

Carbon capture, utilization and storage combined with enhanced oil recovery can help energy production and reduce carbon emissions. But new research shows that it is unlikely to be economically viable and environmentally beneficial without the right economic incentives.

The practice involves using anthropogenic carbon dioxide (CO_2) to inject into oil fields to help extract oil and store the carbon dioxide underground. Researchers found that uniform incentive systems, such as the current 45Q tax credit system, don't lead to the best environmental outcomes.

This study focused on the interplay between economic and environmental outcomes and found that a tiered, performance-based incentive that was sensitive to oil prices and the cost of acquiring CO_2 offered the best results.

Research published May 2025 in the *International Journal of Greenhouse Gas Control*

When Storing Hydrogen, Pore Size Matters

Research conducted by **Ruichang Guo**, postdoctoral fellow; **Hongsheng Wang**, postdoctoral fellow; **Seyyed A. Hosseini**, associate director

Bureau of Economic Geology

Hydrogen is an appealing energy source. However, its low volumetric density makes surface storage impractical for large amounts, making geologic storage a preferable solution for storage and transport.

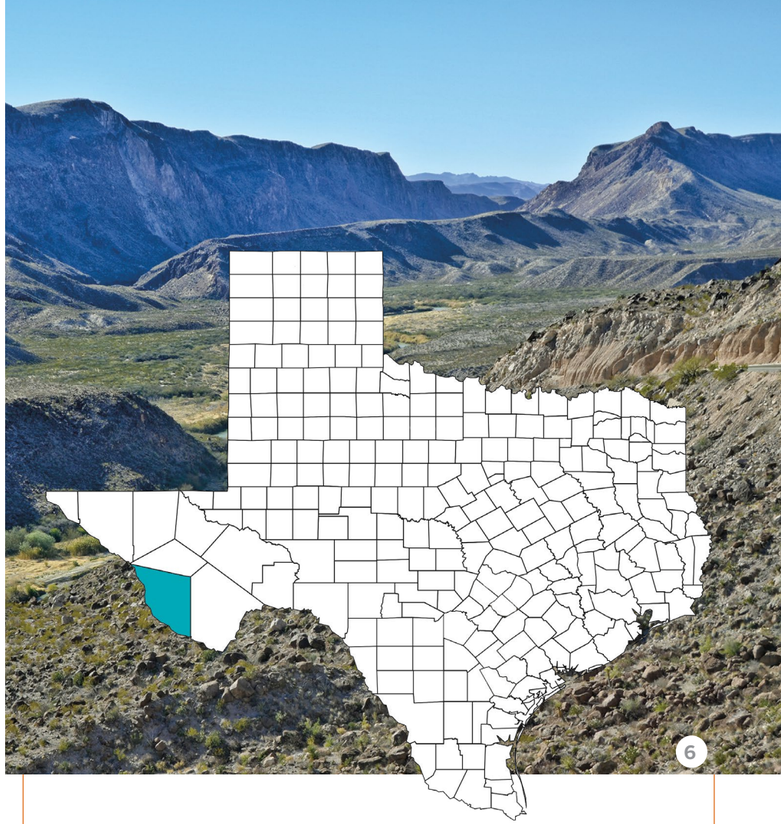
Researchers studied how this would work in saline aquifers, which are widely available and offer a large storage capacity. The study looked at both the storage capacities and the residual hydrogen left after it was produced out of the reservoir in different geologic settings: homogeneous porous media, layered heterogeneous porous media, and fractured porous media.

Researchers fabricated three micromodels using silicon wafers to reproduce the water-hydrogen-brine rock systems in saline aquifers and conducted three cycles of injection and withdrawal for each scenario.

The results found that:

- Homogeneous porous media with larger pore sizes exhibited greater hydrogen storage capacity after injection and lower residual hydrogen after withdrawal.
- In layered heterogeneous porous media, hydrogen preferentially accumulated in the larger pore layers, while the smaller pore layers acted as barriers. Under certain conditions, the residual hydrogen could be up to five times as high as in homogeneous porous media.
- In fractured porous media, fractures with widths greater than the average pore size functioned as high connectivity channels, altering the fluid flow path. Conversely, narrower fractures (widths less than the average pore size) behaved as barriers during withdrawal, leaving up to three times as much residual hydrogen as wider fractures did.

Research published July 2025 in *Fuel*



6

Strong Geothermal Presence in Presidio County

Research by **Shuvajit Bhattacharya**, research associate professor; **Ken Wisian**, former associate director; **Bissett Young**, project manager; **Rama Chandrudu Arasada,** postdoctoral fellow; **Qiqi Wang**, postdoctoral fellow; **David Chapman**, project manager

Bureau of Economic Geology

Researchers conducted a thorough characterization of geothermal resources in Presidio County, finding that they were substantially underdeveloped.

The work was done in cooperation with the Presidio Municipal Development District, which had signed a letter of intent with Exceed Geo Energy to pursue plans for an ambitious deep-well geothermal project in the county.

The study is also helping fill in the scientific and technological gaps needed to further develop a fledgling "geothermal-anywhere" ecosystem, a concept being explored by the HotRock Geothermal Research Consortium.

Research published September 2025 in *AAPG Bulletin*

5. Oil wells as seen from a plane over Texas. Photo: Antoine Fleitz/ Wikimedia Commons.
6. Background: River Road in Presidio County. Foreground: Presidio County is in West Texas along the border of Mexico. Photo: Bureau of Economic Geology.

REFLECTING ON 20 YEARS

The Jackson School of Geosciences was born in 2005. The journey of combining three separate, fiercely independent units into one of the strongest geosciences institutions in the world has not been without its bumps and differences of opinion. We talked to faculty, researchers and alumni who have been along for the ride and helped shape the dynamic and influential school we know today.

Sharon Mosher

Dean Emerita

On the creation of the school:

"The hardest part of becoming a school was that we were three distinctly separate units with different missions, business models, cultures and traditions that previously had totally different reporting structures and only a few knew others outside their unit. Merging these while maintaining our identities was a monumental task.

UT had set up an external vision committee of highly well-known, prestigious people to decide what we should do with this endowment, and to grow. And to be honest, they recommended that we should become like Caltech. 'We need to hire a whole bunch of National Academy members, dismiss people who were already here, and just build a totally new, totally different school.' I still remember being in a meeting with members from the other units and all agreeing, 'We can't do that. We're a department in a major university with a huge undergraduate program. We can't just say we're not going to teach undergrads anymore.' The bureau is the state survey, 'We can't just quit doing applied research.' So collectively, we agreed we had to do it our way—and we did!"

On hard habits to break:

"Even alumni struggled to realize that the Jackson School wasn't just the department. I swear it was 10 years later and people were still saying, 'The Jackson School and the bureau,' 'The Jackson School and the institute.' No, they are part of the school."

In 2005,

Students were wearing capri pants, graphic tees, trucker hats and polo shirts

Or just whatever was comfortable in the field

The Austin metro area was home to 1.46 million people

The population is currently estimated to be 2.5 million

April Duerson

Alumna and FANs Board Member

On her fondest memory as a student:

"I am proud that I got the vegetarian Dr. Helper to go pescatarian for the first time on our field camp. One time I made a raspberry chipotle grilled salmon, and I fried chicken also. They used to give us $100 a week or so to buy groceries for our group, and there was a little cooking area. Most people are making sandwiches with their $100. And April's making four-course gourmet meals out in the wilderness."

On getting out of her comfort zone, and personal growth:

"If you had asked anyone who knew me 25 years ago when I graduated from high school—that you would have seen this sorority girl out in the field with a hard hat and a sledgehammer, they would have said, 'April who?' Because of the Jackson School and burning my perfectly perfect skin on a six-week field camp, I have learned that I actually enjoy wearing coveralls and getting my hands dirty."

People tuned in to watch *American Idol*

Carrie Underwood was the big winner

Elliott Pew

Alumnus and Advisory Council Member

On his proto-Jackson School student experience:

"When the department was a lot smaller when I was in school, the Bureau of Economic Geology was up on the top floor of the geology building. I was a research assistant there. I'd go to class, stay in the building, push the elevator button and go up to the top floor and go to work. I was also a Marine Science Institute student. And over the years, especially after the bureau and UTIG moved up to the Pickle Research Campus, it felt that we were maybe losing some of the closeness of the ties beforehand.

When the Jackson School was formed, I was really enthused about bringing these units under one umbrella where it mimicked much more of what my student experience was. For me, it was a little bit like going to Luby's. You could get fried chicken, you could get lemon meringue pie, and you could get a cloverleaf roll. You could have it all, if you wanted. That was a stimulating environment. You could go in a lot of different directions. That would really allow students to replicate some of the experiences that were so formative to me. But not at the scale as it was for me as a student in the late '70s, but at a scale way beyond that."

In 2005,

People were playing *Madden NFL 06*

Which was the top-selling video game in the U.S. that year

The Texas Longhorns were on their way to winning a national championship

with an undefeated season and a Rose Bowl win on Jan. 4, 2006

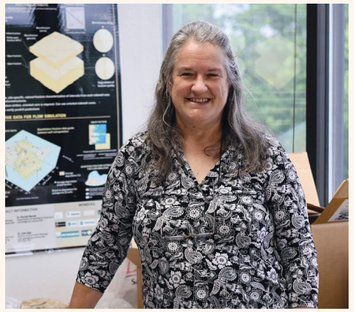
Chris Bell

Professor

Department of Earth and Planetary Sciences

On hiring 17 new faculty members after the department became part of the Jackson School:

"It was nuts. The immediate recognizable direct result of that was that the community that had been the department before that was necessarily destroyed, because you can't hire that many people and integrate them into the culture of a department that quickly. And so what happened instead is we had the people who were already here who had been assimilated into the department's culture, which was largely one of mutual respect and open communication. And we altered that and transformed that into two communities: the old school people and the new people that came in. And that was interesting. And it was divisive in an interesting way. We brought in good people. We brought in smart people. I don't have complaints about who we had come in. That's not the point. But that was not how we should have used that money."



Julia Gale

Research Professor

Bureau of Economic Geology

On leaving the College of Natural Sciences and forming its own school:

"I remember people outside the geosciences were somewhat upset they didn't get what they wanted, and there were lots of people with agendas, and ideas of how it should be. But we had some really strong people. We had Bill Fisher and Scott Tinker, amongst others, who knew exactly what Jack Jackson wanted. And they were not going to allow it to be grabbed by somebody else."

Daniella Rempe

Alumna and Associate Professor

Department of Earth and Planetary Sciences

On what it felt like to be a Jackson School student 20 years ago vs. now:

"I remember hoping that in building the Jackson School, it would help to create a community, to make UT feel smaller. And I think that has been achieved. I think the students now feel pride in the Jackson School. I think they understand the weight of what they're walking into—that it's THE Jackson School, the premier geosciences institution. I didn't understand the strength of the Jackson School at the time."

Crowds flocked to theaters to see *Star Wars: Episode III – Revenge of the Sith*

Which was the top-grossing film at the box office in 2005

Jamie Austin

Research Professor

University of Texas Institute for Geophysics

20 years in, the good:

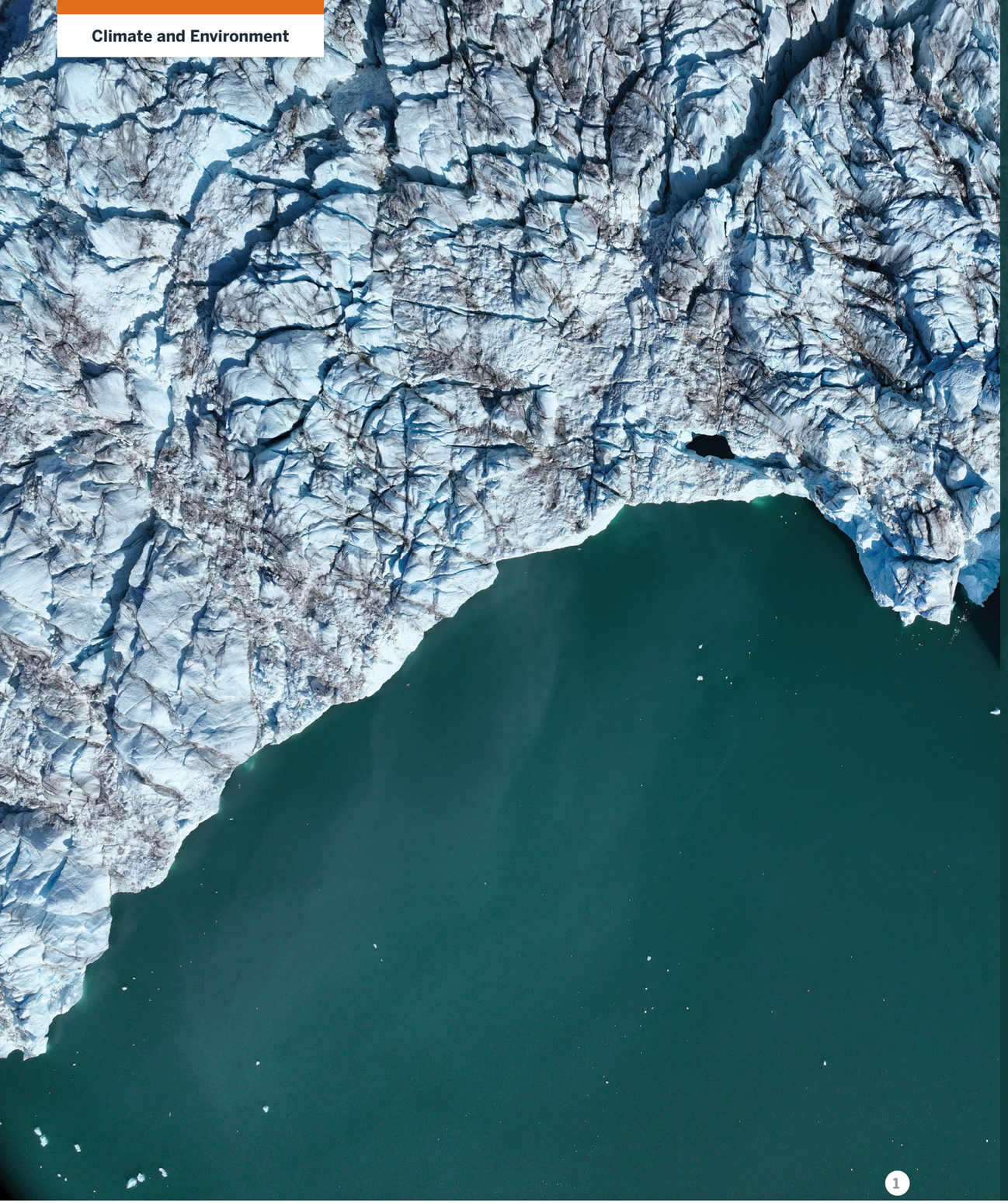
"The breadth of what we're doing here is spectacular. There isn't any Earth science effort in the world that gets close. Individual investigators here are the best in the world. From water to plate tectonics to dinosaurs—to water. There are people here that are world experts in just about every phase of Earth science. Is that exciting? Sure. If you want to go to a talk on just about any piece of Earth science, just wait. Just hang around here for a month."

20 years in, what could be better:

"We have a good reputation, but I think sometimes we sit on it. I think the Jackson School could push harder. We could work better together as units. I don't think anywhere near enough effort is put into that. I don't think enough incentive is put into it, to work together. And by incentive, I mean money. You've got to put money into having people work together."

Mariah Carey's "We Belong Together" was on repeat

It spent 14 weeks at No. 1 on the Billboard Hot 100 Chart



1

Better Understanding Ice Layer Formation and Sea Level Rise

Research by **Mohammad Afzal Shadab,** Ph.D. 2024; **Marc Hesse,** professor; **Cyril Grima,** research associate professor

Oden Institute for Computational Engineering and Sciences; Department of Earth and Planetary Sciences; University of Texas Institute for Geophysics

A newly discovered mechanism for the flow and freezing of ice sheet meltwater could improve estimates of sea level rise around the globe.

The new mechanism explains the process of how impermeable horizontal ice layers are formed below the surface, a process critical for determining the contribution of ice sheet meltwater to sea level rise.

The world's two largest freshwater reservoirs, the Greenland and Antarctica ice sheets, are covered in old snow, known as firn, that has not yet compacted into solid ice. Because the firn is porous, melted snow can drain down into the firn and freeze again rather than running into the sea. This process is thought to decrease meltwater runoff by about half.

However, it's also possible to form impermeable ice layers that can serve as barriers for meltwater—and divert meltwater to the sea. The potential for glacial meltwater to freeze in firns or flow off existing ice barriers makes understanding freezing dynamics within the firn layer an important part of estimating sea level rise.

This new research presents ice layer formation as a competition between two processes: warmer meltwater flowing down through the porous firn (advection) and the cold ice freezing the water in place by heat conduction. The depth where heat conduction begins to dominate over heat advection determines the location of where a new ice layer forms.

Research published August 2024 in *Geophysical Research Letters*

2

Declining Aerosols Could Increase Heatwaves

Research by **Geeta Persad,** assistant professor; **Cameron Cummins**, M.S. 2025

Department of Earth and Planetary Sciences

Heatwaves are becoming more frequent around the world. And while rising temperatures caused by greenhouse gas emissions are part of the problem, the declining levels of aerosols—the small particles that make up smog and air pollution—may be driving the rise even more. This is particularly true in populated areas.

Using global climate models, researchers found that aerosols are up to 2.5 times as influential as greenhouse gases at driving changes in heatwave occurrence in populated areas—with higher levels of aerosols suppressing heatwaves by reflecting the sun's rays.

The researchers found that from 1920 to the present, higher aerosol levels helped suppress the occurrence of heatwaves in populated areas by about half. This trend is now reversing because of declining aerosol levels due in part to clean air policies.

If global aerosol emissions continue to decline as anticipated during the coming decades, heatwaves are expected to go from today's global average of about 40 days per year to about 110 days per year by 2080. The regions that are projected to be hit particularly hard include Sub-Saharan Africa, South Asia, South America and Western Europe.

Research published July 2025 in *Environmental Research Letters*

1: Meltwater streams across the top of the Greenland ice sheet. Image: NASA Earth Observatory.
2: Aerosols in air pollution cause negative health impacts, but they also help cool cities by deflecting the sun's rays. Photo: Wikimedia Commons / DestinationFearFan.

Texas Microplastics Being Swept Out to Sea

Research by **William Bailey,** doctoral student; **Cornel Olariu,** research associate professor; **David Mohrig,** professor

Department of Earth and Planetary Sciences

From tiny pellets to creepy wave-battered baby dolls, the Texas coast is a notable hot spot for plastic debris.

But when researchers went searching for microplastics in sediments pulled from the bottom of Matagorda Bay and its surrounding inlets, they didn't find much.

Most of their samples contained only tens to hundreds of microplastic particles for each kilogram of sediment. This is hundreds to thousands of times less than other bayside environments around the world.

Their findings suggest that rather than settling at the bottom of the bay, microplastics are being swept out to the wider Gulf of Mexico. Once in the open water, the microplastics can absorb chemicals from the surrounding environment and can build up in the bodies of migratory birds, sea life — and eventually humans.

The study marks the first time that researchers have examined the prevalence of microplastics in Texas bay sediments. The results provide important baseline data. They also show that since the bay is not retaining microplastics, more research is needed on where they're off to next.

The research is part of a new field of geosciences called "environmental sedimentology," which treats microplastic fragments like sediment grains from rock. Researchers in this field are interested in where the fragments originate, how they travel in the environment, and where they end up.

Research published March 2025 in *Environmental Science & Technology*

Texas Schools Teach Carbon Capture

Program by **Sue Hovorka,** principal investigator

Bureau of Economic Geology

When Cynthia Hopkins returned to her seventh grade science classroom in Corpus Christi last fall she had a little something extra in her toolkit — ready-made lesson plans and materials to teach her students about carbon emissions and methods of safely trapping them underground.

The lessons aren't just topical; they're geographically important for Hopkins' students at Harold C. Kaffie Middle School. The Gulf Coast is a hot spot for the burgeoning carbon capture and storage (CCS) industry, with more than 50 projects underway or in the planning phase.

CCS is a method of taking greenhouse gases emitted by power plants, industrial facilities or even directly from the air and storing them underground in geological formations that will reliably and securely hold them. The industry is opening new career paths, too.

Hopkins was among the first cohort of Texas science teachers to take special training during the summer offered by the Gulf Coast Carbon Center. The goal was to come up with a K-12 curriculum on carbon capture that is ready-fit for the classroom.

For more information on the program, lesson plans and educational resources, see *gccc.beg.utexas.edu/put-it-back*

3: From left to right: Texas middle school science teachers Cynthia Hopkins, Julia Dolive and Stephanie Hurst work with the Gulf Coast Carbon Center to develop lesson plans for their students.
Photo: Gulf Coast Carbon Center.
4: Larger plastic fragments and other debris pulled from a sediment sample taken from along the Texas coast.
Photo: Jackson School/UTIG.

Arctic Groundwater Carrying Lots of Carbon

Research by **Cansu Demir,** Ph.D. 2024; **M. Bayani Cardenas,** professor

Department of Earth and Planetary Sciences

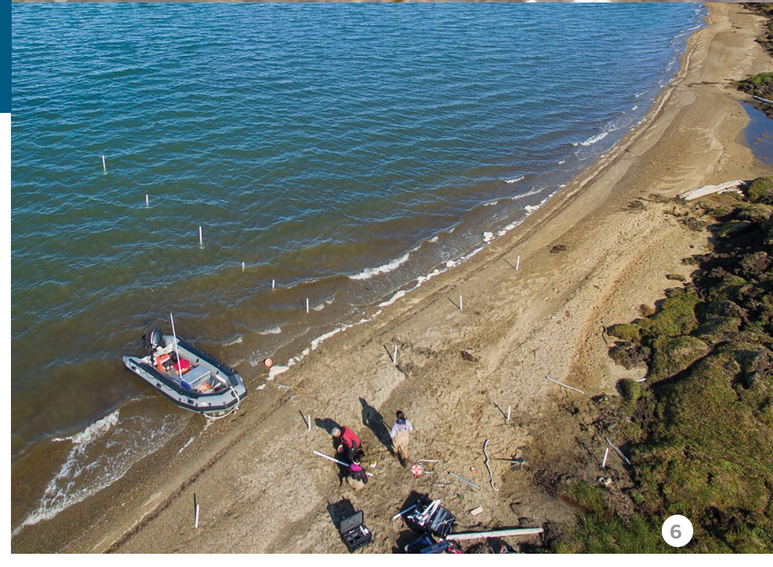
A relatively small amount of groundwater trickling through Alaska's tundra is releasing huge quantities of carbon into the ocean.

Researchers found that although the groundwater makes up only a fraction of the water discharged to the sea, it's liberating an estimated 230 tons of organic carbon per day along the almost 2,000-kilometer coastline of the Beaufort Sea during the summer. This quantity of carbon is on a par with what free-flowing rivers in the area release during summer months.

The study is the first to use direct observations to show that freshwater is being discharged into the submarine environment where the coast meets the sea. Before this research, the existence of fresh submarine groundwater discharge in this area of the Arctic was thought to be very limited.

The study is also the first to isolate freshwater — which could be made up of rainwater, snow melt, thawed shallow ground ice, and potentially some permafrost thaw — from the total groundwater discharge.

Research published November 2024 in *Geophysical Research Letters*



5: Micaela Pedrazas (left) and Cansu Demir (right) install a piezometer along the beach of Kaktovik Lagoon.
Photo: M. Bayani Cardenas.
6: An aerial image of the study site in Kaktovik Lagoon of northern Alaska.
Photo: Nathan Sonderman.

Cities Are Rainfall Magnets

Research by **Xinxin Sui,** doctoral student; **Dev Niyogi,** professor; **Zong-Liang Yang,** professor

Cockrell School of Engineering; Department of Earth and Planetary Sciences

The effect of urbanization on temperature is relatively well known, with cities often measurably warmer than their surrounding rural areas. What fewer people know is that there is also an urban precipitation anomaly, where the presence of urban development measurably affects the amount of rainfall in an area.

Research that looked at 1,056 cities across the globe found that more than 60% of them receive more precipitation than their surrounding rural areas. In some cases, the difference is significant. For instance, Houston, on average, receives almost 5 more inches of rain per year than its surrounding rural areas.

This could have wide-ranging implications, including worsened flash flooding in densely built areas.

In addition to Houston, the list of big cities with the largest precipitation anomalies includes Ho Chi Minh City, Vietnam; Kuala Lumpur, Malaysia; Lagos, Nigeria; and the Miami-Fort Lauderdale-West Palm Beach metropolitan area.

There are several reasons most cities receive more rainfall than their rural neighbors, including the presence of tall buildings, which block or slow wind speeds. This leads to a convergence of air toward the city center.

Research published in September 2024 in the *Proceedings of the National Academy of Sciences*

7: Hurricane Beryl flooded many neighborhoods in Houston in July 2024, like this one near Tom Bass Park. Houston is among many major cities that receive significantly more rain than their surrounding rural areas. Photo: 2C2K Photography.
8: Lyman Lake in Arizona stores water from the Little Colorado River. Pictured in 2021, the lake was 30 feet below capacity. Photo: Ted Wood/The Water Desk.
9: A recent study led by researchers at the Jackson School of Geosciences found that trees could be better than other methods at cooling vulnerable neighborhoods in Houston. Photo: Unsplash.

Southwest Megadrought Could Last Much Longer

Research by **Victoria Todd,** doctoral student; **Tim Shanahan,** associate professor

Department of Earth and Planetary Sciences

The southwestern United States is facing its worst megadrought of the past 1,200 years. According to new research, the drought could continue at least until the end of the century.

Some scientists anticipate that natural climate variability will bring relief, but this research suggests that ongoing warming could be disrupting the natural rhythm of an important climate cycle that brings needed rain to the region.

Much like the seven-year El Niño and La Niña climate patterns, the Pacific Decadal Oscillation has been a dependable ocean climate cycle that alternately brings long phases of drought and rains to the Southwest every 20 to 30 years. However, researchers who analyzed lake sediment cores collected in the Rocky Mountains, which preserve traces of ancient climate conditions going back for millennia, posit that this is not necessarily the case.

They found that during the last period of hemispheric warming some 6,000 years ago, the Pacific Decadal Oscillation was forced out of rhythm, leading to a drought that lasted for thousands of years. Now, as the world warms under the effects of climate change, it appears to be happening again.

Researchers came to this conclusion after they compared simulations of the ancient warming with climate projections for the future.

Research published in July 2025 in *Nature Geoscience*

How Vulnerable Houston Neighborhoods Can Beat the Heat

Research by **Kwun Yip Fung,** Ph.D. 2023; **Zong-Liang Yang,** professor; **Dev Niyogi,** professor

Department of Earth and Planetary Sciences

Researchers have developed a new tool to help cities looking for strategies to keep vulnerable neighborhoods cooler as heatwaves become more intense.

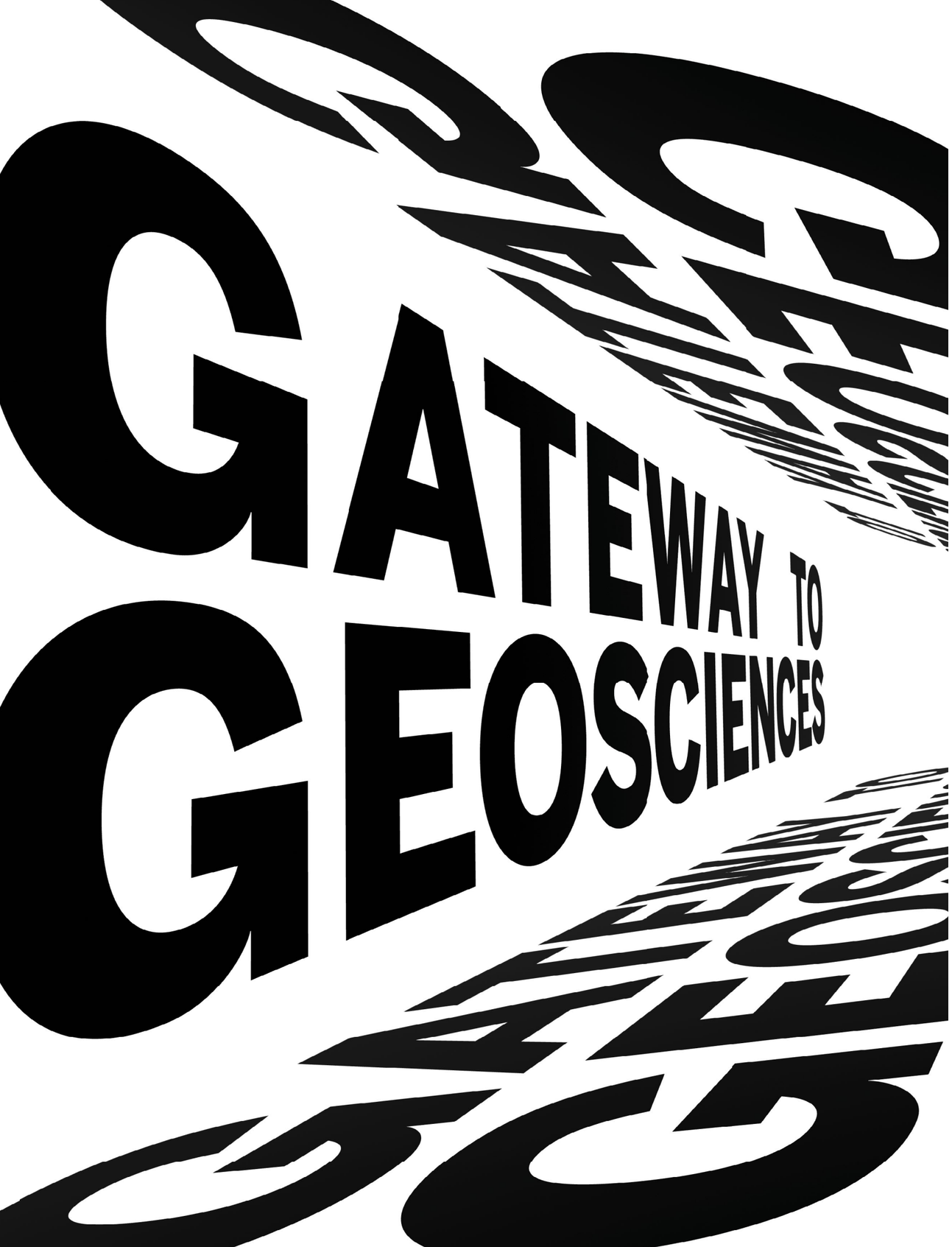
The new physics-based computer modeling framework integrates indices of human comfort and social vulnerability with heat island mitigation strategies and a state-of-the-art urban climate modeling system.

When the researchers applied the index to Houston, they discovered that trees, rather than roof treatments, provided the best relief from the heat in the most vulnerable areas. Vulnerability is assessed based on sensitivity factors such as socioeconomic status, household composition, and minority status as well as adaptive capacity factors such as housing type and access to transportation.

Researchers considered three different heat island mitigation strategies: painting roofs white to increase solar reflectance; planting vegetation on roofs to increase evaporation through the plants; and planting more trees, which increases evaporation and provides shade.

The tool — the universal thermal comfort index — determines human comfort based on temperature, humidity, wind speed and radiation. The researchers said it could be used in any community.

Research published in August 2024 in *PNAS Nexus*



Most undergraduate students have little familiarity with geosciences. That's changing thanks to one of the Jackson School's fastest growing majors: environmental science.

BY JULIA SAMES

On a sunny Monday afternoon in late March, 40 students stand knee-deep in the cool waters of Upper Barton Creek. Notebooks in hand, they shuffle through the water in waders, fumbling under the surface for pebbles to catalog their size, and measuring the creek's lethargic movement with portable flow meters.

For most of these fledgling environmental scientists, this is their first time using this kind of field instrument. It makes the experience of EVS 311: "Field Seminar in Sustainability" all the more memorable.

The course drops students in the middle of natural areas all around Austin — Lost Pines, Mirasol Springs, Waller Creek and Bull Creek, to name a few — and emboldens them to observe and analyze their surroundings through the eyes of a researcher. It's a required introductory course of all environmental science students, and it's often remembered as a favorite.

That's certainly the case for Rachel Breunig, who took EVS 311 nearly 10 years ago when she was a novice geoscientist. She is now a doctoral student at the University of Wisconsin-Madison, where she is studying the feedbacks between rock, water, and life in the Earth's shallow subsurface. This research could help scientists better understand the distribution of water resources and nutrients in a landscape.

"I wouldn't have found my home in geosciences if I hadn't had the introductory experience through environmental science," Breunig said. "Through the way the classes were set up, they really nourished my curiosity, they allowed me to have safe independent research experiences, and they taught me that I have the ability to address hard questions."

Breunig is one of the hundreds of students and counting who have found their pathways to the geosciences through the school's environmental science major.

The major is interdisciplinary, shared between three colleges at The University of Texas at Austin: the Jackson School of Geosciences, the College of Natural Sciences and the College of Liberal Arts. Each school has its own environmental science (EVS) track: geosciences, biological sciences and geographic sciences, respectively.

During the past five years, the once-small program has become one of the most popular degrees in the Jackson School. The number of students majoring in EVS Geo has soared from 28 in 2019 to 109 in 2024. These students now make up about a third of the total undergraduate enrollment at the Jackson School.

Above: Environmental science students catalog pebble sizes and use flow meters to measure the speed of the water flowing in Upper Barton Creek in southwest Austin. Photo: Jackson School.

Students have long cared about the subjects covered in an EVS Geo major: clean water, clean air, mitigating environmental pollution, and determining the environmental response to climate change. And there's a growing demand for workers with knowledge and skills in these areas, from environmental consultants to municipal water managers to corporate sustainability directors.

However, according to EVS program director and associate professor Tim Shanahan, there historically has been a disconnect between students' interest in environmental science and their awareness that many of these topics are rooted in geosciences disciplines.

"I think a lot of the people who do environmental science or who are interested in these kinds of problems—they don't realize these things are taught in geoscience departments," Shanahan said. "Much like how people don't understand that climate science is part of geoscience, and that water resources and hydrology are, for the most part, geoscience."

The situation is changing thanks to a recent revamp of the EVS program led by Shanahan. The intent of the curricular update is to expose EVS students to the nuances of the different tracks as first-year students, thus enabling them to get a clearer picture of which skills, academic subjects and career paths fit with each track.

Armed with this experience, students are now flocking to EVS Geo, and the geosciences in general.

GROWTH SPURT

Shanahan's strategy to incorporate more experiential learning in the EVS introductory courses is in direct response to what many in the field see as a historic gap in exposure to the geosciences at the K-12 level. Most students leave high school with a firm grasp of what biology, chemistry, physics and engineering are, but a hazy understanding of the geosciences, even though they are at the heart of many issues that young students care about.

Most of the students on the EVS 311 field trip were lucky to have been introduced to environmental science in high school through an Advanced Placement course. Over and over again, when they were asked what brought them to this major, this was the refrain: a really great AP Environmental

Science class. One student said it was the only high school class they actually liked.

Some students, after being properly introduced to the geosciences through the EVS program, decide to pivot to a deeper geological specialization within the Jackson School. This is a secondary benefit of having built up the EVS program: higher retention overall in the geoscience majors.

"Maybe they stay in EVS. Maybe they go into traditional geology or hydrology or climate system science," Shanahan said. "All those things are linked to their environmental interest."

That's exactly how Will Eagle, who was once pursuing an EVS Geo major, switched to general geology during his third year.

As Eagle chipped away at his EVS degree, he realized some of the required courses for the major weren't really of interest to him. In order to develop well-rounded environmental scientists who can advocate for their work and collaborate with colleagues across disciplines, students are required to take interdisciplinary courses such as ecology and economics. Eagle realized he would rather be taking aqueous geochemistry and structural geology. And with the classes he had already completed by his third year, he was just as far along toward a general geology degree as he was an EVS degree.

"I was like, 'Well, I'm already doing everything that a geology student does. Why don't I just do a geology degree?'" Eagle said.

After graduation, he sees himself doing hydrogeology work or perhaps continuing his studies in graduate school. Regardless, his underlying motivation remains the same—he wants to be a force for good for the Earth.

Whether an EVS Geo or general geology major, Dean Claudia Mora said the goal in the Jackson School is for students to find the right path for their interests and ensure they have the skills to succeed professionally in that path.

Breunig said she values the interdisciplinary education she received through the environmental science program.

"At the end of the day, the rocks are important—we get many resources out of them. But the reason why we study geology is ultimately to support human life and a broad, biodiverse community," she said. "I think it's very beneficial to have that background biological knowledge."

The popularity of EVS Geo has been great for students and has helped the Jackson School buck the national trend of shrinking geoscience programs. But it has come with some growing pains.

The 40 field explorers wading through Upper Barton Creek were only half of the students enrolled in EVS 311 last spring. The other half of the class was in the lab that day, going over measurements from their own field work during the prior week. The two cohorts alternate between the field and the lab because there aren't enough waders, vans or teaching assistants to drive 80 students

around every week.

And this is just the beginning. EVS students are required to complete a capstone project for their degree, which requires mentoring and one-on-one time with professors who have jam-packed schedules. The capstone project is a formative experience for EVS students. According to Breunig, her capstone—examining weathering indicators in interbedded systems in Northern California under the mentorship of Associate Professor Daniella Rempe—played a critical role in clarifying the specific field of study most interesting to her.

To help alleviate some of these stress points, the school hired Tony Hollenback, an environmental chemist and assistant professor of practice, to help teach some of the introductory EVS and GEO classes. He has also been tasked with maintaining and organizing much of the department's EVS field and laboratory equipment, and acting as liaison between faculty members and EVS students as they work on their capstones.

Danny Stockli, chair of the Department of Earth and Planetary Sciences, noted that during the past few years especially, environmental science students have become much more enmeshed with the rest of the geosciences students at the Jackson School. They are taking geosciences courses, working with Department of Earth and Planetary Sciences professors and research groups, attending department lectures and events, walking across the graduation stage with the rest of the Jackson School students, and hanging out in the preeminent geosciences gathering spot—the Jackson School's patio—along with all the other geosciences students.

"EVS has gone from a semi-orphaned, small interdisciplinary program to a much more integrated program that both the dean and I push very hard," he said. "I think EVS and GEO are one community at this point, which is really positive to see."

CAREERS THAT MATTER

Crystal Alao, a third-year EVS Geo student double majoring in African and African Diaspora studies, was a nature-loving Girl Scout and camping-enthusiast as a child. She remembers what first piqued her interest in this subject—an environmental scientist who visited her troop to teach them about air pollution. Alao got a badge, and she was hooked. When it came time to apply to college, the Jackson School's environmental science major seemed like the strongest choice, and its interdisciplinary curriculum has been a great fit for her.

"I'm learning everything. I know physical geology, hydrology, human geography and physical geography. I feel like I'm learning so much more than I would have thought I would, and it's helped me frame what I want to do in the future," Alao said.

She came to the Jackson School thinking she would graduate and go into environmental consulting. But Alao has learned how much she loves working in the field and, through an internship with the City of Austin's Youth Forest Council, realized that she was passionate about education. She now plans to go to graduate school with the goal of becoming an environmental science professor.

Jobs in assuring clean water, clean air and a healthy environment—jobs that drive personal fulfillment and take on critical issues—align with the values of Generation Z writ large. And these are the kinds of jobs that flow naturally from a geosciences education, be it focused on environmental science or traditional geology.

A great example of that impact is developing in the Jackson School's EVS Geo and hydrology programs, which were boosted by a $1 million donation from an anonymous donor (see story, page 66). That gift will support student field research in regional hydrology and internships in Texas state agencies that are responsible for managing our water resources. Students will help build public online dashboards to help Texas communities better understand and manage their water resources.

"Our job is to ensure that regardless of the path they choose, Jackson School students will be prepared for the challenges of the future," Mora said. "Building up the next generation of energy and resource geologists, environmental scientists, hydrologists, climate scientists—that's why we're here."

Opposite page: Will Eagle at Hamilton Pool, west of Austin, where he was conducting water sampling. Photo: Will Eagle.

Above: Crystal Alao in Helper, Utah, while on GEO 660 field camp. Photo: Crystal Alao.

1

2

Cross-Disciplinary Science Dates Ichthyosaur's Death

Research by **Matthew Malkowski,** assistant professor

Department of Earth and Planetary Sciences

Two years ago, paleontologists discovered a fossil of a pregnant ichthyosaur in Patagonia and named her Fiona. Now, thanks to some synergistic sedimentology research, scientists know that she died 131 million years ago.

The research was co-led by Assistant Professor Matthew Malkowski, who studies how landscapes evolve over time by analyzing sediment grains. When in the field in Chile's Torres del Paine National Park, he crossed paths with Chilean paleontologist Judith Pardo-Pérez. They realized that the high-precision isotope dating that Malkowski was conducting on grain samples from the region could also reveal an age for the ichthyosaur.

Researchers think that a massive underwater landslide may have killed Fiona by rapidly burying her under a layer of sediments—a demise that would explain her exquisite preservation. Malkowski's ongoing research in Patagonia could help shed light on that theory along with the history of other marine landslides in the area hundreds of millions of years ago.

Research published February 2025 in the *Journal of Vertebrate Paleontology*

Change in Ocean Calcium Shaped Sea Life

Research by **Katherine Faulkner,** B.S. 2023; **Chris Lowery,** research associate professor; **Rowan Martindale,** associate professor

Department of Earth and Planetary Sciences; University of Texas Institute for Geophysics; College of Natural Sciences

A change in calcium carbonate dynamics in Earth's oceans appears to have influenced the evolutionary trajectory of tiny but mighty sea creatures: foraminifera, or forams for short.

Forams have called Earth's oceans home for hundreds of millions of years and are a critical part of the food chain. But on the individual level, forams are very small. Each one is just a single cell surrounded by a shell-like skeleton, which can be made from calcium, sediments or organic matter.

In a study, researchers tracked the diversity of forams over the past 541 million years—an eon known as the Phanerozoic—analyzing how forams with different skeleton types fared during big changes in Earth's environment. This included multiple bouts of ocean acidification and five mass extinctions. The researchers then compared this data with changes in ocean chemistry over time.

They found that calcareous forams—which build their shells by secreting calcium carbonate—started to flourish once calcium carbonate became widely available in Earth's oceans. They went on to become the dominant type of foram living today.

Research published April 2025 in *Proceedings of the Royal Society B: Biological Sciences*

1. The fossil remains of Fiona the ichthyosaur are about 11.5 feet long. Photo: Judith Pardo-Pérez
2. Paleontologist Judith Pardo-Pérez (left) and sedimentologist Matt Malkowski give a "Hook 'em" from Patagonia. Photo: Matt Malkowski.

3

The Art of the Dino

On May 2-3, 2025, the metal collection cabinets at the Jackson School of Geosciences' Vertebrate Paleontology Laboratory were transformed into art gallery walls for a paleontology-inspired art show.

The show included photography, painting and sculpture by members of the Jackson School community, along with other artists. Undergraduate student Isabelle Milford—a photographer and student researcher—planned the show, working with laboratory director Matthew Brown.

The show also included science and art talks as well as a screening of the short film "DECOMPOSERS."

Participating artists and speakers were: Kaleb Allen, Ally Boville, Matthew Brown, Nic Bushell, Janet Canamar, Sabine Ruth Fletcher, Amelie Godfrey, Kristen Littlefield, Juniper Luedke, John Maisano, Steven May, Isabelle Milford, Ash Moore, John Moretti, Trung Nguyen, Liam Norris, Noel Ouellette, Angelica Reyes, Will Reyes, Ben Rodwell, Chris Sagebiel, Stacie Skwarcan, Erika Tandy, Cullen Townsend, David Trevino Ledesma, Antonius Tyas, Sarah Wilson, Tianyi Xu and Sam Zbinden.

6

Oldest-Known Modern Bird Was Duck Relative

Research by **Chris Torres,** Ph.D. 2020; **Julia Clarke,** professor
Department of Earth and Planetary Sciences

An avian skull from Antarctica is strengthening the case for *Vegavis iaai* as the world's oldest-known modern bird, with the researchers placing it in the same evolutionary grouping as today's ducks and geese.

Vegavis lived in the Late Cretaceous during the Age of Dinosaurs, but scientists have long argued about where it fits on the tree of life—with the answer having implications for how far along modern birds had evolved while non-avian dinosaurs still walked the Earth.

The skull, which is intact and nearly complete, provided new anatomical insights on *Vegavis*. Far from a distant cousin, the ancient bird was a close relative of ducks and geese, the results indicated. The research presents more evidence that it is an Anseriform, an evolutionary grouping that includes today's waterfowl.

This result suggests that it didn't take the demise of the dinosaurs for birds to start diversifying into lineages that are still with us today.

Research published February 2025 in *Nature*

4

5

Cave Cat Bones Are Neotropical Species

Research by **John Moretti,** Ph.D. 2025; **Melissa Kemp,** associate professor; **Staci Loewy,** research scientist associate; **Alex Janelle,** doctoral student

Department of Earth and Planetary Sciences; College of Natural Sciences

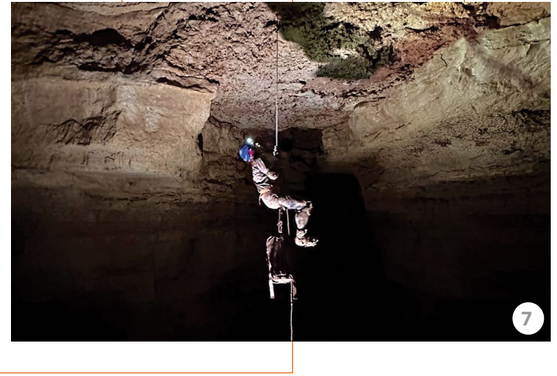
Ancient DNA analysis has revealed that two small cat fossils retrieved from Natural Bridge Caverns aren't common bobcats, as initially thought, but a neotropical species—such as an ocelot, margay or jaguarundi. The researchers also determined the fossils to be about 11,500 years old.

Small neotropical cats are endangered and extremely rare. The ocelot is the only species that is still found in Texas today. The discovery sheds light on feline fauna that lived in Texas thousands of years ago.

Research on the Natural Bridge Cats reaches back to the 1963, when the first few cat bones were recovered by a student from The University of Texas at Austin. In 2023, cavers found more bones, a second cat and pawprints pressed in mud—all of which helped reignite research on the ancient felines.

Read about the history of the Natural Bridge Cats in the 2023 *Newsletter*

8



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3. Isabelle Milford with her artwork and a fossil skull. Photo: William Whitworth.
4. A skull from the collections paired with an archival scientific illustration. Photo: Jackson School.
5. A gyotaku-style ink print of a freshly caught fish by Steven May. Photo: Jackson School.
6. An artist's interpretation of the world's oldest-known modern bird *Vegavis iaai.* Art: Andrew McAfee/Carnegie Museum of Natural History.
7. John Moretti descends into a chamber in Natural Bridge Caverns. Photo: Chris Higgins/Natural Bridge Caverns.
8. An ocelot. Photo: Anna Cotta/Wikimedia Commons.

Dinosaur Footprints Found After Floods

When several large, three-toed footprints were discovered embedded in rock on the banks of Big Sandy Creek in Austin after the massive July 4 floods, the Travis County judge called the Jackson School of Geosciences in to investigate.

Matthew Brown, the director of the vertebrate paleontology laboratory, and laboratory manager Kenneth Bader went to the scene and confirmed that the prints were left behind by dinosaurs that lived in the area about 115 million years ago.

The footprints, which are about 20 inches long, were probably made by *Acrocanthosaurus*, a large carnivorous dinosaur from the Early Cretaceous. The researchers also identified additional prints found nearby as possibly belonging to a large herbivorous sauropod dinosaur called *Paluxysaurus*, which is the state dinosaur of Texas.

Dinosaur tracks can be found across Central Texas. Brown said that the footprints revealed by the floodwaters may be related to a known dinosaur trackway in Leander.

7. One of the dinosaur footprints revealed by the July 4 floods. Photo: Kenneth Bader.
8. An artist's interpretation of an *Acrocanthosaurus*. Art: Xing Lida.
9. A Buc-ee's T-shirt featuring *Anchitheriomys buceei*, a species of extinct beaver discovered in the Jackson School collections. Photo: Jackson School.
10. A set of *Diplodocus* teeth sampled for the study. Photo: Liam Norris.

Buc-ee's T-shirt Shows UT Fossil

Buc-ee's, the popular Texas rest stop with the grinning beaver mascot, recognized a fossil discovery made at the Jackson School of Geosciences in true Buc-ee's fashion—by slapping it on the back of a T-shirt.

The shirt features an illustration of a skull from *Anchitheriomys buceei*, an extinct species of beaver that Research Associate Steven May named after the rest stop. May found the fossil skull in the Jackson School collections and identified it as a new species in 2023. The fossil's 15-million-year-old age reminded May of a Buc-ee's billboard that read: "This is Beaver Country."

"I thought, 'Yeah, it is beaver country, and it has been for millions of years,'" May said.

The skull is situated on the shirt as part of a "beaverlution" timeline that starts with the appearance of *A. buceei* 15 million years ago and ends with the founding of Buc-ee's in 1982.

Dinosaurs Were Picky Eaters

Research by **Liam Norris,** Ph.D. 2025; **Rowan Martindale,** associate professor; **Aaron Satkoski,** laboratory manager; **John Lassiter,** professor

Department of Earth and Planetary Sciences

You are what you eat, it turns out—even if your last meal was 150 million years ago.

While the grub itself may be long gone, a record of dinosaurs' favorite foods has been stowed away in their ancient tooth enamel during the past eon. When researchers at the Jackson School of Geosciences took a close look, they discovered that some dinosaurs were discerning eaters, with different species preferring different plant parts.

Tooth enamel contains calcium isotopes that reflect the range of foods the dinosaurs ate; different types of plants have different chemical signatures, and discrete parts of trees—from buds to bark—can also have unique signatures. According to Liam Norris, the study's lead author, the results help explain how so many behemoths all lived together in the same area at the same time.

Norris examined teeth from four dinosaur species and one crocodyliform, representing both herbivores and carnivores. The bones and teeth of these ancient creatures were all found in the Carnegie Quarry deposit in northeast Utah.

He found that the long-necked *Camarasaurus* ate mostly conifers, with a preference for woody plant tissues. The short-armed *Camptosaurus* preferred softer, more nutritious plant parts such as leaves and buds. The trunk-legged *Diplodocus* ate more of a mixed diet that included soft ferns and horsetail plants lower to the ground, as well as tougher plant parts.

The meat-eaters are the bipedal *Allosaurus* and the comparatively small, crocodile-like *Eutretauranosuchus*. The *Eutretauranosuchus* is more likely to have eaten fish, while the *Allosaurus* primarily ate herbivorous dinosaurs—possibly including the three other dinosaur species mentioned in this study.

Research published October 2025 in *Palaeogeography, Palaeoclimatology, Palaeoecology*

LIFE ON THE ROCKS

Professor Charlie Kerans Retires After 40 years at UT Austin

By Monica Kortsha

It's 8:30 a.m. on a bright Sunday morning, and cars are whizzing by on the highway near Austin's Pennybacker Bridge. On the side of the road, a class of about 25 undergraduate geology students is studying the limestone cliffs that line the passage.

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

That steady geologic story is exactly why Professor Charlie Kerans has brought his field methods class here. The sediment built up into solid limestone that persisted even as the sea went away. When the Capital of Texas Highway cut through it, 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 from the outcrop so students can more clearly see the grains. "The rock is all gray. But the story is all in the details."

Kerans is one of the foremost carbonate geologists in the world. He has made a career of reading rock and teaching people the skills they need to make their own geological interpretations. From UT students, to industry groups, to geological societies, Kerans estimates he has led hundreds of people to outcrops across Texas and around the world.

By learning to read the details in the rock, students in Kerans' field class are learning skills that can be applied to reservoir characterization the world over, particularly in oil and gas. Kerans hints at the importance of this skill.

"Geology isn't just a puzzle," he said, the class gathered around a white suburban that Kerans has been sketching stratigraphy on with a dry erase marker. "It's a multibillion-dollar puzzle."

The humble local roadcut doesn't have oil field connections. But it has much to offer as a teaching exercise. That makes the outcrop a fitting spot for Kerans' final field trip as an instructor at The University of Texas at Austin. From the very beginning, Kerans has dedicated his career to research and education.

Above: Charlie Kerans (blue shirt and orange hat) on the Permian Reef Trail in 2008 with students. Photo: Jackson School.

Big Impact

Kerans retired from the Jackson School of Geosciences in August after 40 years at UT.

He spent the first 20 years as a researcher at the Bureau of Economic Geology, where he led its Reservoir Characterization Research Laboratory (RCRL)—one of the bureau's longest-running and most successful research consortia, bringing in $30.6 million over the years so far. He spent the next 20 years as the Robert K. Goldhammer Chair in Carbonate Geology at the Jackson School's Department of Earth and Planetary Sciences, where he focused on teaching students. He also served as department chair from 2016 to 2020.

During his career, Kerans mentored generations of geoscientists. He directly advised 23 doctoral students and 31 master's students, not to mention the hundreds of undergraduate students he taught in the classroom and the field.

Many of his former students now work in the oil and gas industry. Ted Playton is one of them. He earned master's and doctoral degrees working with Kerans during the 2000s. He is now a senior geoscience adviser at Matador Resources and was a geologist at Chevron for 17 years before that.

Playton said that the experiences he had as a graduate student gave him an edge working in a range of reservoir environments around the world, particularly Kazakhstan.

"This background that I developed working with Charlie very much influenced my career and opened up doors that were really important for me and my family," Playton said. "He's very insightful and knowledgeable about the kinds of problems the industry has."

Carbonate rocks are made of calcium carbonate—$CaCO_3$. Most of this material comes from myriad marine life forms, including the reef builders such as corals and their ancient counterparts, as well as plankton, snails and clams, either directly from the animal remains or from $CaCO_3$ that's dissolved into ocean water and precipitates out when the chemistry is right.

Many of the world's best-known carbonate deposits are the remains of paleo reefs—huge conglomerations of fossils and sediment. Their origins create porous and fractured rocks that make for excellent oil reservoirs. Scientists estimate that up to 60% of the global hydrocarbon supply is contained in carbonate rocks. The world's largest oil fields—including many of those in the Permian Basin—are hosted in carbonate strata.

However, while the pores and fractures can help oil and gas accumulate, they can also create complex pathways for flow that can complicate oil and gas production and cause hydrocarbons to be left behind. But a clear understanding of stratigraphy—of geological layers and how they interface and interact— can help producers navigate the reservoir environment and improve recovery.

According to Pat Welch, a past president of the West Texas Geological Society (WTGS), the work of Kerans and his students in the Guadalupe Mountains brought much-needed clarity to the stratigraphy of the Permian Basin. Their geological studies helped untangle a region that had been known by contested formation names and other pieces of incomplete and idiosyncratic data.

Below: Kerans (in hat) and GEO 420K students on a field trip to a local Austin road cut in April 2025. This was the last class trip Kerans led before retiring. Photo: Jackson School.

"He's got this fantastic stratigraphic framework that ties all of the old formation names from all these different areas," Welch said. "From the outcrops in different mountain ranges into the subsurface, everything had different names and it was very confusing. It takes an incredible amount of effort, time and intelligence to put it all together, and Charlie and his students graciously shared their knowledge with WTGS members through countless field trips, presentations and poster sessions."

In 2022, Welch presented Kerans with an Honorary Life Membership award to the society to honor his contributions to the geology of West Texas and his role in sharing the knowledge. Kerans' research has also earned him top awards from professional societies. This includes the Society for Sedimentary Geology's Francis J. Pettijohn Medal for excellence in sedimentology (2015) and the American Association of Petroleum Geologists Robert R. Berg Outstanding Research Award (2022).

Call of the Wild

Although well versed in industry applications now, Kerans was a relative late bloomer when it came to understanding how his scientific research could be applied outside of academia. When he was a graduate student, his interest in carbonate geology was driven by innate curiosity and a desire to explore the world—especially its most remote parts.

For his doctoral research at Carleton University in Ottawa, Canada, Kerans spent his summers near the Arctic Circle studying 1.2 billion-year-old reef complexes, some of the oldest on Earth. Working his field site situated between Great Bear Lake and the Arctic Ocean involved being dropped off by float plane in the Canadian bush at the start of the summer and being picked up at the end of it.

Kerans' summer job as an undergraduate geology student at St. Lawrence University informed his decision to study in the wilderness. On paper, the job had little to do with geology. He worked at remote Atlantic salmon fishing camps in Nunavut, Canada, that were operated by the father of a close friend. The environment was inspiring.

"I just really enjoyed being out in the bush there," Kerans said.

The salmon camp experience also helped him during his first year of graduate school. When he ran out of money in the field, he headed to a nearby fishing camp. He and his field partner worked for the funds to fly home.

After earning his doctoral degree, Kerans went to Australia to work as a postdoctoral researcher at the Geological Survey of Western Australia with Phillip Playford, an influential geologist whose stratigraphic research laid the groundwork for the western Australian oil industry.

Playford was an excellent teacher. Kerans learned all about the geology of Canning Basin, a preserved paleo reef akin to the Permian Basin, and Shark Bay stromatolites, analogs to Earth's oldest fossils created by sheets of cyanobacteria and carbonate grains. He also accompanied Playford as he documented Aboriginal songs on a tape recorder and was invited to visit sacred sites.

"That wasn't really our business; we were doing geology," Kerans said. "But Playford's approach was when you're doing geology and you're doing fieldwork, you're out in the world and you're interacting with everything in it."

Although Kerans' position was funded by the Western Australian Mining and Petroleum Research Institute, Kerans' understanding of how his research could actually be put to use came later. There was a barrier between the academic data and the industrial application.

That all changed when he came to Texas in 1985.

As a research associate at the bureau, Kerans became immersed in a research institute where the data he collected was meant to inform discernable outcomes. The research had to bring tangible benefit to its funders, which were largely the University Lands, the State of Texas and the industry members of the bureau's newly formed research consortia groups.

Left: An RCRL field trip to the Weir Dam in the Pecos Canyon in 1996. Photo: Charlie Kerans.
Right: Kerans (center) with Chris Zahm (right) and a Texas DPS pilot and helicopter. Photo: Charlie Kerans.

Each consortium organized research around a shared subject. Companies paid a membership fee to have first access to consortium data and interpretations, and provide data of their own to the researchers. In 1987, after short stints working on a Department of Energy-funded nuclear waste storage assessment and with the University Lands Advanced Reservoir Initiative, Kerans and colleague Jerry Lucia formed the Reservoir Characterization Research Laboratory (RCRL), which focused on studying geology related to carbonate-hosted oil reservoirs, initially within the Permian Basin, and later across the state and internationally.

Kerans credits his bureau colleagues, especially Lucia and Senior Research Scientist Don Bebout, with showing him the ropes.

"They're the ones who educated me. This is how you take your knowledge and make it useful," he said.

Learning how industry applied the geological data and interpretaion to oil and gas production brought a new perspective to Kerans' work. It didn't stifle his innate curiosity or his love of wild places. But it did help channel it toward research that could lead to new knowledge and useful applications for industry.

Kerans turned his attention to the Guadalupe Mountains of West Texas and New Mexico and the surrounding areas that contained world-class outcrops serving as analogs for subsurface reservoirs of the Permian Basin. His research would help to modernize the understanding of the geologic structures and how they were connected to the oil fields of the Permian Basin.

It also led to a nickname that's an honor all its own: "The Guad Father."

Exploring the 'Guads' Anew

From computer modeling to seismic imaging to lidar, the 1980s and '90s offered a whole new way to see the world. In the Guadalupe Mountains, Kerans saw a place ripe with opportunity, both for academic understanding and stakeholder return.

There was just one problem.

When Kerans started at the bureau, he was told that fieldwork wasn't a priority because the bureau was more focused on applied subsurface geology rather than academic fieldwork. Kerans, who was aware of the bureau's rich history of fieldwork, recalls just nodding along.

"I just thought, 'Yeah, well, I'm just going to ignore what that guy said about fieldwork. I will probably be able to figure out something.'"

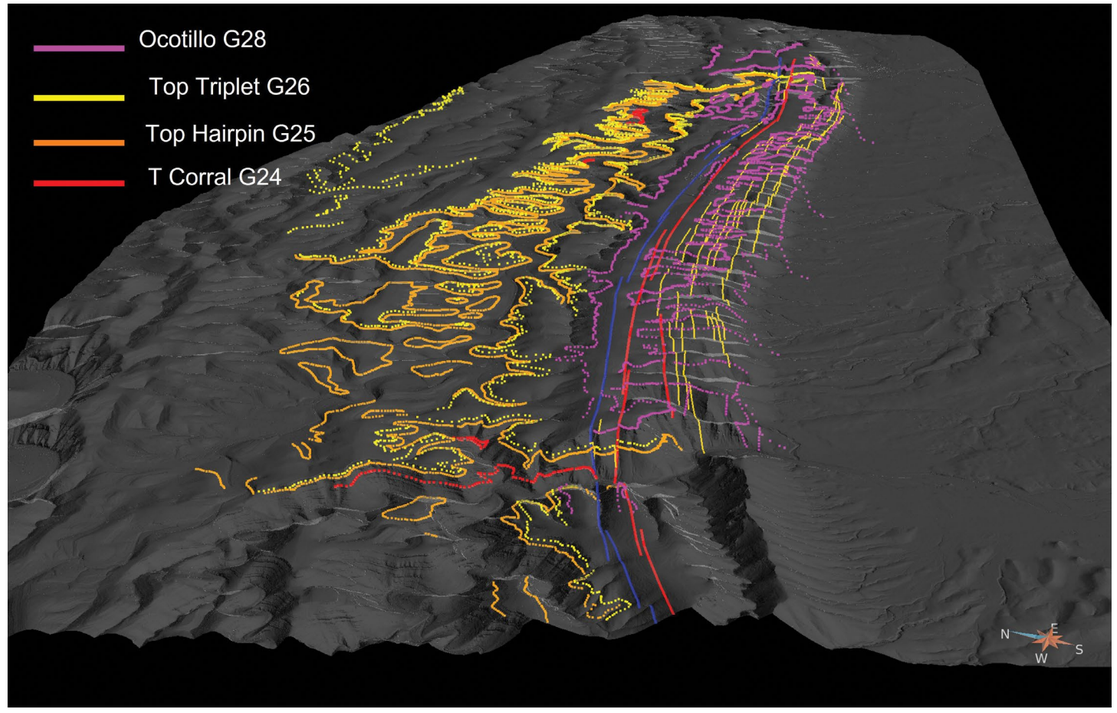
At the RCRL, Kerans did exactly that.

His fieldwork focused on documenting large-scale geological features, from canyon walls to eventually the entire Permian Basin-facing sides of the Guadalupe Mountains and nearby Delaware Mountains. He used aerial photography from small fixed-wing aircraft as well as the Texas state pooling system's police helicopter to gather critical images. During the 2000s, Kerans collected ground-based and aerial lidar data with the help of Jerry Bellian and others at the bureau. These were some of the earliest geological applications of the technology and resulted in remarkable three-dimensional details of the mountain ranges.

The ambitious scale of the work made for some key advances in a relatively short time frame. In 1987, the team started mapping porosity and permeability in outcrops of the San Andres Formation, one of the most productive geological units in the Permian Basin. Within 18 months, Kerans, Lucia, and fluid flow modelers Graham Fogg and Ekrem Kasap at RCRL had put together a geostatistical map and simplified fluid flow simulation that helped illuminate how injecting water to recover oil—known as "secondary recovery"—could be applied to subsurface reservoirs in the units.

Mapping the mountain faces between 2010 and 2012 was Kerans' first foray into large-scale lidar mapping. Although it took 18 months to process the data, it proved to be an important milestone—bringing the bureau into the world of digital mapping.

Left: Kerans, Scott Tinker (on rock), and Emily Stoudt in McKittrick Canyon in the Guadalupe Mountains circa 1990. Photo: Scott Tinker.
Right: Kerans (with beard) holds a map during an RCRL field outing to the Guadalupe Mountains. Photo: Charlie Kerans.



The survey also helped lead to the discovery that one of the most well-known geologic features in the area — Carlsbad Caverns — is actually controlled by a fault system that developed during the Permian period. The sprawling caverns are located inside the foothills of the Guadalupe Mountains in the northeast portion of the range. The lidar point cloud, combined with detailed surface mapping by the bureau's Chris Zahm and Maren Mathisen, revealed a trench-like structure that aligned with the boundaries of the cave. Bounding the cave system on both the northwest and southeast sides were two parallel faults, which Kerans and Zahm referred to as the "Cave Graben." These faults were the primary influence on fluid flow that led to the growth of the main cave passageways. That meant that faults that formed in the Permian some 250 million years ago set the stage for a cave that would form millions of years later.

The RCRL members were the first to know about findings, but through research papers, book chapters and presentations, Kerans shared the research with professional geology groups across the state and the region.

According to Stonnie Pollock, a member of the West Texas Geological Society, sharing the data has helped geologists working in the oil and gas industry come to agreements about geological formations that were previously hotly contested — such as the Clear Fork Formation. There are still naming issues when it comes to institutional paperwork and leases, Pollock said, but he is grateful that members of his profession are on the same page.

"At least us geologists can all agree," Pollock said. "I don't have much ground to up and say we need to call it this instead of this, but when Charlie or one of his students do, people tend to pay attention better."

'What Stories Can You Tell?'

Students and consortia members often accompanied Kerans on his field trips to the Guadalupe Mountains and later to other West Texas locales, such as Pecos River Canyon. During the late 1980s, one of the consortia members was a young geologist at Marathon Oil named Scott Tinker — who would go on to lead the Bureau of Economic Geology as director from 2000 to 2024.

Tinker recalls learning about carbonates at every scale from Kerans, from micropores all the way to whole canyon walls.

"He puts all of this together and then will tie that to well-log data and seismic and other measurements," Tinker said. "So, you start integrating all those together and you get a better picture."

The RCRL member trips usually included a hike up the Permian Reef Geology trail, one of the world's best exposures of a paleo reef. Over a 2,000-foot vertical climb, the trail offers a complete cross-sectional view from bottom to top — like "you pulled the plug out of the bathtub and the water ran out," said Kerans, who co-edited a guidebook on the trail published by the bureau.

But according to people who joined Kerans in the field, the most memorable part about hiking the trail may have been watching Kerans on the way down.

Tinker, Playton and Pollock all mentioned Kerans' tradition of running right down the mountain side, racing any contenders who were up to the challenge. (Kerans reports his best time at 28 minutes. He suspects his downhill runs and having a double knee replacement later in life might be related.)

Playton, Kerans' former graduate student, said that simply seeing Kerans in action on the outcrop was inspiring to him as a young geologist. But he said an early field experience with Kerans also taught him the value of having a sense of humor when something goes wrong.

According to Playton, when issues arise, Kerans' first instinct usually is to laugh — with the specific timbre depending on the severity of the blunder. Playton recalled becoming well acquainted with what he calls the "Kerans Cackle" his very first time in the field with him.

They were camping in West Texas when a bad storm rolled in. Playton spent the night fighting a losing battle with a leaky tent. In the morning, Playton realized that Kerans had spent the night in their suburban. When Playton, utterly exhausted and soaked in the early morning, opened the door to the SUV, Kerans couldn't stop laughing at the pitiful figure standing before him.

"He just starts laughing uncontrollably for like five minutes," Playton recalled. "And this was probably the second night that I've known him."

After warming up with some coffee, Kerans told Playton that their field plans had changed. They were going into town to get a hot breakfast. To Playton, that simple gesture proved to him that his adviser had his back.

"You know, he's hardcore and intense, but he really cares about the welfare of his students," Playton said. "There's always something weird that happens in the field, right? But then, afterward you laugh about it."

Just getting out in the field helps set the stage for great stories, said Kerans. To him, it's one of best parts of being a field geologist.

"I always kid my petroleum engineering friends, 'What stories can you tell? I had a rough time at the golf course or something?'" Kerans said. "For a geologist, we have adventures built into things."

Still, the field can be a dangerous place. Tinker and Kerans happened to share what they agree is their most harrowing experience together: a rattlesnake bite and a missing person in the middle of the night during a weeklong industry field trip down the Pecos River in West Texas.

The group was in canoes and didn't have a cellphone signal or a vehicle. So, Kerans and Tinker set off in the middle of the night, jogging about 7 miles toward a ranch house so they could call 911. While riding with EMS back to the camp to pick up the snakebite victim, they found the missing person wandering along the road and picked him up. And as an emergency helicopter was taking the snakebite victim to a San Antonio hospital where he made a full recovery, they got another shock. The day was Sept. 11, 2001. Through the windows of the ranch house where EMS had brought the victim, Kerans and Tinker saw the Twin Towers falling for the first time on a TV screen.

Tinker said seeing how Kerans kept his cool as problems just kept piling up is something he will always remember.

"It's a long story, but I think it's an important one because it describes the respect he had. He had everyone working together," Tinker said. "It was pure chaos, and still, he was able to complete the job and get everybody on board."

Opposite page: A 3D model of the Carlsbad Caverns Cave Graben fault system. Photo: Kerans et al.

Below left: Ted Playton with a ground-based lidar system in the High Atlas mountains of Morocco circa 2005. Photo: Klaas Verwer.

Below right: Kerans takes notes in the field during a trip to The Bahamas in 2024. Photo: Liesel Papenhausen.

Passing the Torch

Starting in 2008, Kerans started to expand the scope of his field research. In addition to the desert mountains of West Texas and New Mexico, he started studying the Pleistocene limestones of San Salvador Island in The Bahamas and the nearby Turks and Caicos Islands.

To the casual observer, the environments might seem like polar opposites. To geologists, the connection is clear: They're both paleo reefs—one ancient and the other more modern. The Permian reef of the Guadalupe Mountains is over 250 million years old. The Bahamian island limestones are Pleistocene, dating to about 125,000 years ago. What's more, the fossil reefs share a shoreline with modern iterations, complete with corals, sharks and tropical fish.

Kerans was interested in using the more refined geologic record in The Bahamas to learn more about carbonate geology from a different, more modern perspective. He was also interested in a new research question: What do the paleo-shoreline deposits of The Bahamas record about past sea-level rise, not just across the region as a whole, but in particular places across the island? And what can that tell us about how contemporary sea-level rise might play out along shorelines around the world?

"It's remarkable how you see the change even in the last few thousand years," Kerans said. "There are differences in how the beaches are accumulating or eroding on a regional basis, so it's got a big impact."

A new era of technology—such as lidar and video-equipped drones, differential GPS and advances in computer map making—made it possible to collect and catalog the landscape in detail. Kerans also started leading field trips under the waves, with the group suiting up in scuba gear to investigate underwater outcrops.

And when Benjamin Keisling, a glaciologist who studies the Greenland ice sheet, was hired as a research assistant professor at the University of Texas Institute for Geophysics in 2022, Kerans saw an opportunity to get at these questions from a totally new perspective, while also getting students involved.

That's how the course "Ice Sheets, Sediments and Sea Level" was born. It was launched during Spring 2024 and was held again during Spring 2025.

The class combines Keisling's and Kerans' areas of expertise—physics-based-ice sheet modeling and field-based carbonate geology, respectively—and culminates in a trip to San Salvador Island in The Bahamas. Here, students apply skills and approaches from both Kerans and Keisling to collect data on sea-level rise for a group research project.

"It's a hard class—but it's a very integrative class that shows what geosciences and geology is traditionally, and also what it can be," Keisling said. "It showcases the multiple strengths of the discipline—the different skills and perspectives that you can bring as a geoscientist to do the work we do."

According to undergraduate Liesel Papenhausen, a fourth-year environmental science major concentrating in geology, the class brought a whole new perspective to how different areas of the Earth influence one another.

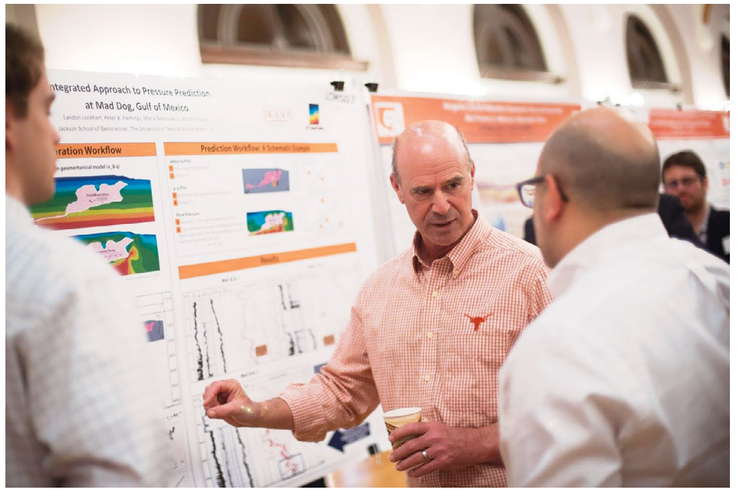
"I really loved how interdisciplinary the class was because it brought together two types of science that seem almost antithetical," said Papenhausen, who took the class in 2024. "I mean the Earth system is so connected that you can go to The Bahamas and learn things about the Laurentide ice sheet. That's so unintuitive and so amazing."

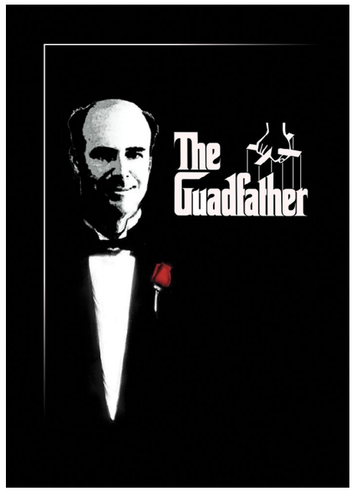
The class rolls together what Kerans is known for—amazing field experiences, carbonate geology and critical questions. Keisling noted that it's not just working with Kerans and his decades of knowledge that helped make the class an unforgettable and innovative success. Kyle Fouke and Scarlette Hsia, two of Kerans' graduate students, were there too. Keisling said that he saw in them the same sensibility and skillfulness in the field that make Kerans great.

"It's wonderful the way that he's passing on that knowledge and training geologists that are going to continue to have that same eye for detail and a sense for figuring out Earth's story, while also branching out and using their own methods, their own perspective, and taking their own approaches," Keisling said.

Playton said that type of educational experience is something to cherish long after graduation. He sums up the impact of working with Kerans at the start of his own dissertation. After a dedication to his wife, and mother and father, he writes: "To Charlie Kerans, who taught me to walk on rock."

Below left: Kerans atop a Pleistocene reef on San Salvador Island in The Bahamas. Photo: Ted Playton
Below right: Students in the 2024 cohort of the field class "Ice Sheets, Sediments, and Sea Level" in the field on San Salvador Island. Photo: Liesel Papenhausen.





Clockwise from top right: T-shirt design featuring Kerans as the "The Guadfather." Photo: Kelly Hattori; The first RCRL drone "selfie" in 2011. Photo: Charlie Kerans; Kerans gives a "Hook 'em" at the conclusion of his DeFord Lecture in 2025, alongside Professor David Mohrig. Photo: Jackson School; Kerans at the annual student research symposium in 2017. Photo: Jackson School.

Impact of a 40-Year Program of Carbonate Field Research
In his final DeFord Lecture, Charlie Kerans shares highlights from his career studying carbonate geology.

Scan here or visit ***bit.ly/4hwVqpt*** to watch.

Texas Hydro Hub on the Way

The Jackson School of Geosciences is developing a student-driven Texas hydro hub to help make student research more accessible to water managers, decision-makers and the public.

The new online hub is possible thanks to a recent $1 million gift that is also funding student internships, equipment for water studies, and research support.

Since June of 2025, the funding has helped students work with scientists from the City of Austin's Watershed Protection Department, the Edwards Aquifer Authority and the Bureau of Economic Geology. It has also supported student efforts to set up a new real-time stream flow network to monitor Roy Creek near the new Mirasol Springs development near Dripping Springs, along with a groundwater monitoring network on the Jackson School's White Family Outdoor Learning Center that can support the efforts of the Hays Trinity Groundwater Conservation District. Additional equipment has recently been acquired to set up water level monitoring at Comal Springs in New Braunfels.

The hydro hub is planned to go live on the Jackson School website in early 2026.

1. Jackson School students measuring the flow of the Blanco River just before it sinks into the Edwards Aquifer. Photo: Jackson School

2

Lake Travis Temperature Stratification Changed After July Floods

Research by **M. Bayani Cardenas,** professor

Department of Earth and Planetary Sciences

Professor M. Bayani Cardenas has documented a change in the temperature profile of Lake Travis since the July 4 floods that struck Central Texas.

Cardenas, with the help of a team of students and divers, has been diving to the bottom of Lake Travis for years to collect water samples to study the lake's temperature and chemistry. During a dive in early August, he found the lake's temperature stratification had changed from previous years. He suspects that this is related to the floods that raised Lake Travis by more than 30 feet in a matter of days.

He found the changes in the thermocline, which is a temperature transition zone between a warmer top layer of water and a cooler bottom layer in a stratified lake. Lake stratification and the size of the transition zone influence water chemistry and ecology.

In previous years when the lake's water level was high, the thermocline was sharp—going from warm to cool in about 5-15 feet. After the floods, Cardenas reports that it's deeper and more diffuse—going from warm to cool in about 15-20 feet.

He said he will continue to track how the thermocline and water chemistry change on future dives.

Water In Bedrock is Helping Sustain Trees in Edwards Plateau

Research by **Daniella Rempe,** associate professor; **Logan Schmidt,** M.S. 2022

Department of Earth and Planetary Sciences

Bedrock is a dynamic and critical supply of water in the Edwards Plateau region of Texas, soaking up water during stormy times and holding onto it during times of drought. That matters for trees growing in the area, which often don't have soil to rely on. Trees may also be playing a role in enhancing the bedrock's water storage capacity by increasing permeability and porosity of the underlying rock.

These findings are based on three years of measurements, starting in 2020, from a team of scientists from the Jackson School of Geosciences and Texas A&M University. Their field site was a sloped karst environment in the Edwards Plateau region of Texas dominated by juniper and live oak trees.

They found that in some areas, bedrock holds about twice the amount of water found in the overlying soil. What's more, the greatest permeability and porosity was found under the trees. This suggests that the growing trees aren't just tapping into rock moisture but are also playing a role in increasing the storage capacity.

This collaborative study shows that in just 80 years, the shift from grasses to trees has dramatically altered the permeability of the underlying limestone. This helps explain why, in some cases, increasing tree cover actually boosts groundwater recharge. In the Edwards Plateau, where groundwater is a critical resource, understanding how land cover shapes water pathways is critical for long-term water resource management.

Research published August 2025 in *Water Resources Research* and September 2023 in *Scientific Reports*

Seismic Groundwater Monitoring in SoCal

Research by **Shujuan Mao,** assistant professor

Department of Earth and Planetary Sciences

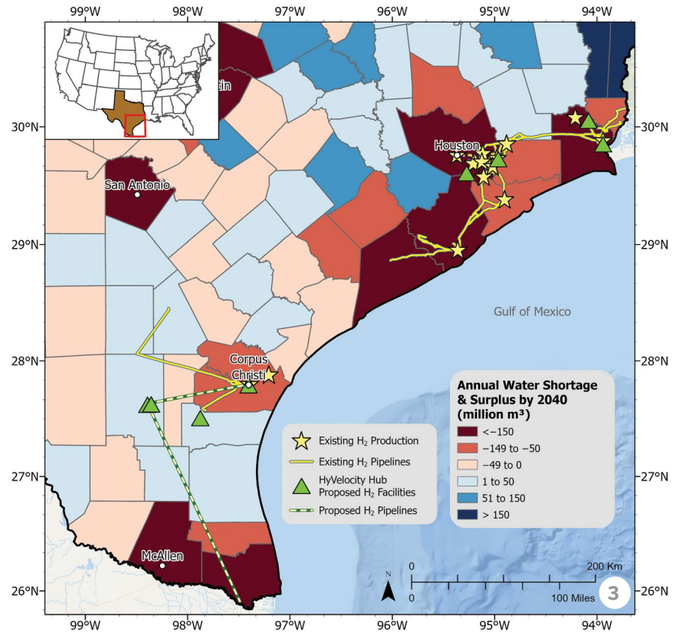
The greater Los Angeles area has long been subject to intense seismographic monitoring. A network of highly sensitive seismometers peppers the region on a constant vigil for earthquakes. Now, researchers have developed a new way to use that existing infrastructure and its decades of data to estimate water levels in the region's aquifers, which serve some 10 million residents of Los Angeles and Orange counties.

The new method uses ambient seismic vibrations and analyzes the speed of seismic waves to sense the aquifers and measure groundwater levels.

The researchers analyzed the impact of a historic series of atmospheric river storms, which dumped more than 140% of California's average annual precipitation in just three months in 2023. Those rains, combined with torrential rainfall in Southern California from Hurricane Hilary in August 2023, nearly refilled surface reservoirs and shallow aquifers depleted by decades of drought and groundwater extraction.

But even a year of extreme precipitation failed to replenish aquifers located 50 meters or more below the surface. Unlike the shallow aquifers, these deeper aquifers regained only about 25% of the groundwater they had lost since 2006.

Research published February 2025 in *Science*



2. Professor M. Bayani Cardenas collecting water samples in Lake Travis. Photo: Xiangfei Kong.

3. Existing and proposed hydrogen infrastructure in the Gulf Coast region of Texas in 2024, and projected water needs by county in 2040. Map: Lin et al.

How Much Water Does Texas Hydrogen Need?

Research by **Ning Lin,** chief economist; **Mariam Arzumanyan,** postdoctoral fellow; **Edna Rodriguez Calzado,** geospatial and geoprocessing analyst; **Jean-Philippe Nicot,** research professor

Bureau of Economic Geology

There are many ways to make hydrogen—a carbon-free energy source and petrochemical ingredient. But no matter the method, all hydrogen production requires a lot of water.

In a recent study, researchers examined just how much water the growing Texas hydrogen economy might need. They found that by 2050, new hydrogen production facilities could account for 2%-6.8% of water demand in the state.

In comparison to big water draws, such as irrigation or municipal use, hydrogen's demand is relatively small. But it has the potential to disproportionately affect communities that face future water issues. This includes the Gulf Coast, where most current hydrogen infrastructure is built and where most new hydrogen infrastructure is planned. The State Water Plan projects this region to face large annual shortages of fresh groundwater by 2040.

To estimate future water demand, researchers used data from a 2024 National Petroleum Council study that estimated the regional hydrogen demand from 2030 to 2050. They examined the water requirements from all aspects of hydrogen production, including water used for cooling, and the water needed for different mixes of "blue hydrogen" and "green hydrogen." Green hydrogen is produced from water using electricity. Blue hydrogen is made by burning natural gas.

Research published January 2025 in *Sustainability*

Q&A

The Big SIP

The Jackson School's new plan for investing in bigger, bolder science

By Anton Caputo

It's been 20 years since Jack and Katie Jackson gave their life's fortune to create the Jackson School of Geosciences. Their charge was to be great and make a difference. During the two decades since, researchers at the distinct units that make up the school — the Bureau of Economic Geology (BEG), the Department of Earth and Planetary Sciences (EPS) and the Institute for Geophysics (UTIG) — have worked toward that goal, building one of the top geosciences schools in the country.

To take the next step, the Jackson School has launched a new $1 million Strategic Investment Plan (SIP) to better align those efforts and foster collaborative, interdisciplinary research to tackle three issues of major relevance to society:

- Earth Hazards, from Physics to Risk
- Energy, Resources, and Global Change
- Planetary Dynamics and Habitability

The bold move comes as the nation's research funding environment is being radically changed, and the school is welcoming a new dean. Jackson School Associate Dean for Research Michael Young sat down with Communications Director Anton Caputo to discuss the SIP and why this is a perfect time for the effort.

What is the SIP?

The idea behind the SIP is to organize ourselves to do great science around our strengths and along common themes of research that are already being conducted across the school. The Jackson School has a distinct advantage because of the size and the breadth of science that can be done here. It's a place for people looking to do meaningful science to partner and invest. So, the SIP takes advantage of what's here and moves it toward a common goal. It's not a research proposal, but a plan of tactics to lead in the areas of geosciences that can help solve the biggest challenges facing society. Ultimately, we want to elevate science to make a real difference.

The three focus areas are geohazards, energy, and planetary dynamics. How did you come up with them?

We focused the discussions on what the Jackson School's individual units (the Bureau of Economic Geology, Department of Earth and Planetary Sciences and Institute for Geophysics) identified in their own strategic plans, and what they want to emphasize in the future. We took those plans and found common areas of interest so all the units could be involved. And really, we wanted to focus on areas of research that are relevant to society — big issues where we can help lead the charge to find solutions.

If the Jackson School already works in these areas, how will the SIP help?

We specialize in many areas of geosciences at the Jackson School, but we can leverage them further by combining them. By bringing these research areas together, we can help better define the questions that need to be solved and then contribute to solving them. This is really an effort to make science more effective and relevant.

For example, if we focus on understanding the physics of geohazards, we will be able to do a better job of understanding and forecasting the downstream impacts on communities and infrastructure. We have lots of people doing great work on geohazards, very huge strengths in geodynamics and solid earth and earthquakes. We do a lot of work on extreme climatological events, droughts, floods, hailstorms, things like that. We have several faculty working on wildfires and erosion events and things of that nature. But we haven't really put them together.

The school has been around for 20 years, but it tends to be kind of siloed between the three units. Even though we're all geoscientists, there are still significant differences in the way that the three units operate, and these differences keep them from collaborating as much as we would like. What we have done with the SIP is help enable collaboration across the units, as well as across UT and other institutions.

Associate Dean for Research Michael Young is leading the SIP initiative to support bold science at the Jackson School.

SIP Focus Areas

Earth Hazards, from Physics to Risk: Extreme events and their effects on society

Earthquakes, floods, heat waves and other earth hazards are an increasingly urgent threat to human life, critical infrastructure, industry and property. This research focus leverages many of the Jackson School's existing areas of expertise in fundamental science and modeling of Earth hazards while opening up leadership opportunities to guide strategies for forecasting, managing risk, mitigation and preparedness.

Bridging Energy, Resources, and Global Change: Balanced solutions for our growing society

Developing and producing the energy the world needs in an environmentally and economically sustainable way is one of the biggest challenges facing society. The Jackson School has long been a leader in applied energy research. This research focus takes advantage of this strength while expanding into emerging areas of energy and environmental research. This research focus includes carbon management, water resources, energy production, critical minerals, the impact of climate change and sea level rise.

Planetary Dynamics and Habitability: Observations, investigations and opportunities

Using Earth as an analog to understand other planetary bodies — and vice versa — across a wide range of scientific disciplines offers tremendous opportunity to study the conditions required for life to begin, evolve and flourish. This comparative research can also give insight into the surface and deep-Earth processes that are most influential as planetary and evolutionary drivers. This research focus will allow the Jackson School to use its existing strengths in building and operating earth monitoring systems and to continue to expand on its ongoing science related to Earth, Mars, Europa, and other planetary bodies.

You've allocated $350,000 for each of the SIP areas. What is this funding for?

We felt that another strategic plan without money behind it was just going to end up on a shelf. We thought, "Let's put some real money behind it and use that as a way of exciting people." It brings the units together, and it sends a very strong signal outside of the Jackson School that even in times of turmoil, we're not going to sit back and do nothing.

We know that $350,000 is not enough to do lots of research, but it's enough to hire a postdoc and do very targeted types of things—workshops, bring in a faculty member or researcher from off campus for three or four months, hire a program coordinator. All of those things could be necessary to enhance the research and reduce the bureaucratic drag and speed bumps.

There are bureaucratic and administrative hassles to doing research. We all know this, but we don't want the faculty to have to deal with those, because that burns a lot of creative energy. So, we are helping to build administrative structure surrounding these teams to make it as easy as possible for them to be creative as they build out these research areas.

How will you judge success?

That's a good question and a hard one to answer because success comes in different ways. Let's say in the end we publish some synthesis papers or maybe some journal articles that really try to redefine the science. OK. Maybe we get some proposals approved—great. Maybe we have a better understanding of each other and have more respect for each other's research and our research units—that's great too. If we suddenly get a $10 million grant to build a Science and Technology Center, yep, check. That's good. And if we help to set an example for geosciences and other universities, check. That's great.

Ultimately, we'll have to see if we can redefine the science and build stronger connections to other stakeholder groups that we didn't have before, not only in the Jackson School, but elsewhere across our campus and in other campuses. And if other schools look at what UT is doing and take a cue from it, to me, that would be amazing.

Each SIP focus area is headed by two faculty leads who help foster collaboration and facilitate research.

Earth Hazards, from Physics to Risk

Yuko Okumura, UTIG
Research Associate Professor

James Thompson, BEG
Research Assistant Professor

Bridging Energy, Resources, and Global Change

Tip Meckel, BEG
Research Professor

Daniella Rempe, EPS
Associate Professor

Planetary Dynamics and Habitability

Cyril Grima, UTIG
Research Associate Professor

As of time of publication, second lead yet to be selected.

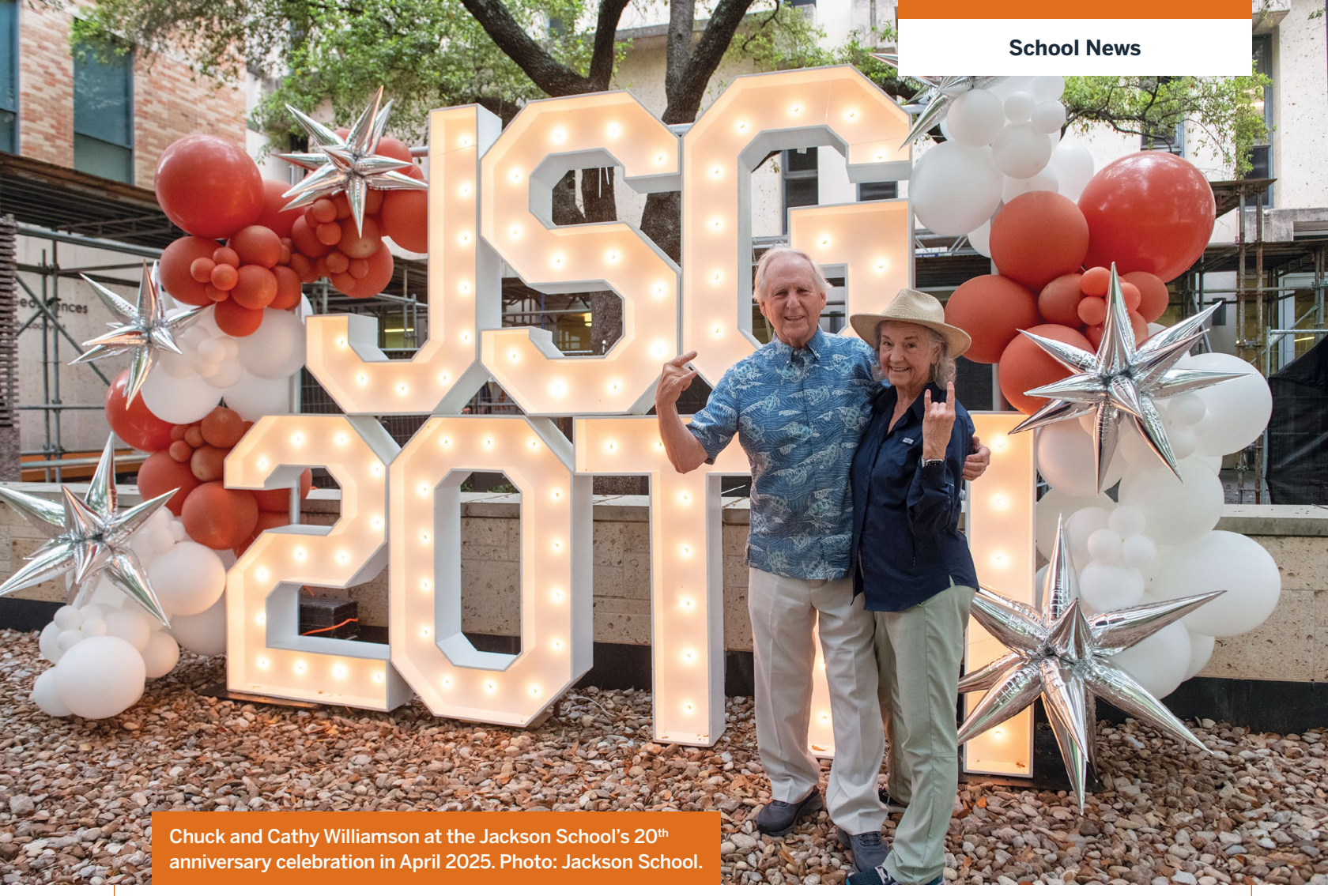
As you said, this is a difficult time for research funding. Is this the time to roll out something new like this?

Why do this now? Because we can. And because during times when funding is uncertain is when we focus on leaning forward, so we are years ahead of the game when the funding cycle returns.

Years ago, I was at a meeting with the university liaison lead for a major oil company. And they had just made a large donation to UT to do research in topics that they really weren't focused on. They were interested in topics that were outside of their traditional upstream, midstream and downstream businesses. And we came up with several ideas—geothermal, global water issues. Lots of different things. I asked the liaison, "Why are you doing this now with oil at $50 a barrel and lots of surplus?" And they told me that the company waits for the bad times to invest in research so that when the cycle reverses, they are ahead of everybody else. So really, whether we're in good times or not, this is something we should be doing, but especially now.

Finally, the Jackson School is about to undergo a change of leadership and welcome a new dean. Does that make the timing of the SIP more difficult?

We really feel that a new dean is going to look at the SIP and understand that it's the right thing for the Jackson School to do. But this is not a finished process, and the door is open for new ideas. These topics are fairly obvious given where we are societally, but there are opportunities for the new dean to tweak or add however he or she wants to.



Chuck and Cathy Williamson at the Jackson School's 20th anniversary celebration in April 2025. Photo: Jackson School.

The Jackson School Turns 20

During April 3-5, the Jackson School of Geosciences celebrated two decades of excellence in geosciences research and education with a 20th anniversary celebration. The Jackson School community came together to reflect on all that's been accomplished at the school—and to look ahead to what comes next. The event included research presentations and leadership discussions, and it was capped off with a Boots & BBQ Bash.

See page 37 for more on what's changed (and stayed the same) at the Jackson School over 20 years.

More Milestones

Two long-time research groups at the Jackson School of Geosciences also celebrated decades of research

Gulf Basin Depositional Synthesis Project Turns 30

Based at the University of Texas Institute for Geophysics, the Gulf Basin Depositional Synthesis project is an industry-supported initiative that uses data collected from industry partners to create geologic maps for use by academic researchers and industry scientists. The data provide a comprehensive picture of Gulf-wide sedimentary history and have led to new discoveries on the depositional history and framework of the Gulf Basin.

More on GBDS: ig.utexas.edu/energy/gbds

Gulf Coast Carbon Center Celebrates 25 Years of Research

Based at the Bureau of Economic Geology, the Gulf Coast Carbon Center is a global leader in carbon storage research. For decades, the center has led studies, most focused in the Gulf of Mexico, on geological storage capacity and monitoring of CO_2 in the deep subsurface. The center's researchers are involved with policy and outreach, contributing to the United Nations' COP climate change conferences, and teaching carbon storage courses for industry professionals.

More on GCCC: gccc.beg.utexas.edu

Jackson School's Enrollment at an All-Time High

For the first time since the Jackson School of Geosciences was founded in 2005, undergraduate enrollment has surpassed 400 students.

This record growth puts the Jackson School in a select group of programs amid a global decline in geoscience enrollment. U.S. geoscience enrollment fell 30% from its peak in 2015, according to the American Geosciences Institute, with a small number of schools recently seeing a significant rebound.

Danny Stockli, chair of the Department of Earth and Planetary Sciences, attributes the school's growth to a number of strategic moves. For example, in 2023 the Department of Geological Sciences was renamed the Department of Earth and Planetary Sciences to emphasize the disciplinary breadth of the school. The curricula for all of the majors were revised to be more modern and flexible for students seeking to transfer to a different degree within the school. Climate system science was added as a new major. The enrollment cap was lifted for the popular environmental science major. And there has been newfound strategic and operational collaboration between the student affairs office and the department, Stockli said.

"This is a success story that bucks the national trend, and it is no coincidence," Stockli said. "It takes a shared vision, and we are all pulling in the same direction together."

Student enrollment has been on the rise at the Jackson School for the past six years. During that time, it has more than doubled, from 194 students in 2019 to 411 currently. University-wide, enrollment is also at an all-time high, climbing to 55,000 students in Fall 2025. This follows a 24% bump in first-year student applications over the year prior.

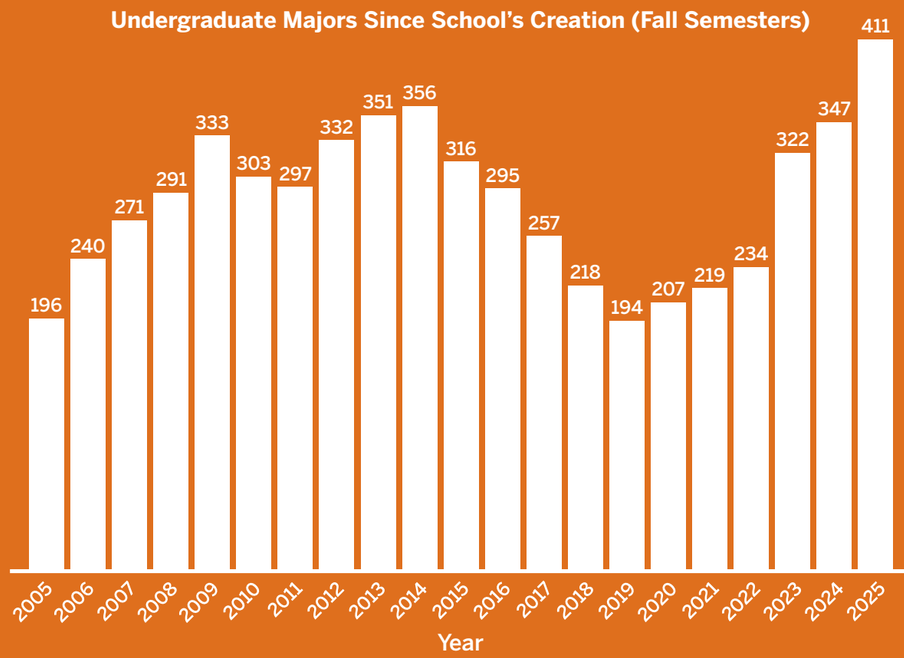
Tim Weiss, the Jackson School's director of student affairs, said that the school is now nearing its limit for undergraduate enrollment, and that if applications continue to rise at this clip, admissions probably will need to become even more selective.

Under his care, the student affairs office has strived to welcome and assist students through their entire journey as undergraduates, from recruitment to admissions, enrollment to orientation, and academic advising to graduation.

"We've got the right people in the right places. We're being responsive to our students' needs. And collectively as a school, it feels like we're all rowing in the same direction," he said.

Claudia Mora, dean of the Jackson School, noted that at large research universities, undergraduate programs can sometimes get lost amid other priorities. UT Austin is notable in its commitment to strong undergraduate programs, she said.

"I am very proud of the Jackson School's thriving student ecosystem and the high-quality, high-opportunity education it enables," Mora said. "The foundation of that ecosystem — its 'primary producers' — is the commitment, talent and collaboration of our faculty and staff."



On Display: Ore Minerals From Mexico and Meteorites

Sparkling in inky blues and vibrant greens, you don't need to be a geologist to be dazzled by the 40 new minerals that recently joined the Henry R. and Ann H. Hamman Gem and Mineral Gallery at the Jackson School of Geosciences. But for the geologically informed, this world-class collection of ore minerals from Mexico is really something special.

Most of the minerals are azurite and malachite collected from the Milpillas Mine of Sonora, Mexico, a commercial copper ore mine that operated for 13 years before closing in 2020. There are minerals from each of the four main working levels of the underground mine — offering a view of the unique geological environment of each level. One specimen even records a geological transition zone, morphing from blue azurite to green malachite in the scope of a single mineral.

Another notable specimen is an azurite that received the 2022 Miguel Romero Memorial Award, an honor that recognizes the single best Mexican mineral at the Tucson Gem and Mineral Show, which is the largest and most prestigious show of its kind in the world.

Just a few display cases over, visitors can gaze upon otherworldly specimens that recently joined the gallery. They consist of three large meteorites: a shiny iron-nickel specimen found in Campo del Cielo, Argentina; an etched slab of Muonionalusta iron-nickel meteorite; and a Pallasite meteorite.


Jackson School Dean Claudia Mora holds a pallasite meteorite in the Hamman Gem and Mineral Gallery. Photo: Callie Richmond.

The Jackson School's thumbnail collections are also on display for the first time. These are mini mineral samples arranged in rows in rainbow order.

The Mexican ore minerals were donated to the Jackson School from the personal collection of Eric Long and his wife, Tracy Walsh. The meteorites were donated by Paul Bierman, a Memphis medical doctor and a fan of the Jackson School's mineral collection. They are on public view at the Henry R. and Ann H. Hamman Gem and Mineral Gallery in the Jackson Geological Sciences Building on The University of Texas at Austin campus.

Stockli Chairs Department for Second Term

Professor Danny Stockli, who has served as the chair of the Department of Earth and Planetary Sciences since 2021, has been reappointed to the position for another four years.

Jackson School Dean Claudia Mora asked Stockli to continue in his role as chair after he served a successful first term that involved a major overhaul of the undergraduate curriculum, the establishment of the new climate system science major, a name change for the department, and more financial independence in the unit's administration.

"Danny really stepped up to this challenging position," Mora said. "His leadership has been top-notch, and I often look to him for ideas in my own role. He has devoted himself to this job, and the department is all the better for it."

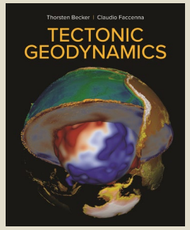
Stockli and Mora both felt it was important to have continuity in the department as a new dean takes the helm. But the main reason he agreed to stay on as chair is because it is in his nature to see things through.

"I am not a person that likes to walk away from unfinished tasks, and there are major challenges that needed to be tackled," Stockli said.

For example, while fundamental changes to the undergraduate curriculum have already been adopted, tweaks and additional changes will be an ongoing facet of the full implementation. The goal was to remove any rigid prerequisites and degree plans so that students can change their majors more easily, while also ensuring that they have the skills and foundational knowledge they'll need for upper-level courses and a career in the geosciences.

"The new curriculum framework has given us the flexibility to make these adjustments more easily without waiting for new course catalogs. However, it will take two or three years to make sure things are fine-tuned," Stockli said.

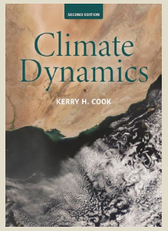
New Books



Tectonic Geodynamics

By Thorsten Becker and Claudio Faccenna

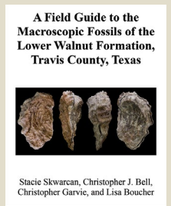
Integrating tectonics, structural geology, and geodynamics in a single volume, this textbook brings together geophysical and geological approaches to understand the physical processes that shape the planet's evolution, from mantle convection to orogeny and earthquakes. It was published by Princeton University Press in November 2025.



Climate Dynamics, 2nd Edition

By Kerry H. Cook

Written with math, science and engineering students in mind, this textbook provides a strong introduction to the physical understanding of Earth's climate. This second edition includes updated information on hydrology, the cryosphere, contemporary climate change and climate prediction. It was published by Princeton University Press in February 2025.



A Field Guide to the Macroscopic Fossils of the Lower Walnut Formation, Travis County, Texas

By Stacie Skwarcan, Christopher J. Bell, Christopher Garvie and Lisa Boucher

This pocket-sized guidebook illustrates and briefly describes all the macroscopic invertebrate groups that have been previously reported from the Bee Cave Member of the Lower Walnut Formation. This fossil-rich geologic unit was deposited in a shallow marine environment during the Cretaceous and has outcrops in the Austin area. Fossils from the unit include sponges, sea urchins, worm burrows and mollusks. The specimens featured in the guidebook are curated at the Non-vertebrate Paleontology Laboratory at the Jackson School of Geosciences. The book was published in June 2025.

Jackson School Professors Lead UNESCO Chair in Open Data, AI, Water, and Cities

Dev Niyogi

Bridget Scanlon

This summer, The University of Texas at Austin was named the UNESCO Chair in AI, Water, and Cities. Leading the chair are Professor Dev Niyogi and Research Professor Bridget Scanlon, who are both faculty members at the Jackson School of Geosciences.

UNESCO is an agency of the United Nations that promotes international cooperation in education, science and culture. The UNESCO chair designation recognizes UT as a resource that can help cities make data-driven decisions to become more resilient to disasters, weather extremes and water scarcity.

"This is really a tremendous honor for UT and the Jackson School," said Michael Young, associate dean for research at the school. "The UNESCO Chair is an acknowledgement that UT is part of the global community and can help foster collaborative partnerships for using AI and data to build back better, develop future economies, and increase the resilience of cities to the risks of natural hazards and extremes."

Scanlon is the program director of the Center for Sustainable Water Resources at the Jackson School's Bureau of Economic Geology and is a leading authority in water resources. Her research involves using remote sensing, global and regional models, and ground-based monitoring data to advance research that can help policymakers and water managers make informed decisions.

Niyogi is the principal investigator of the University of Texas Extreme Weather and Urban Sustainability (TExUS) Lab. He is also co-lead for the UT-City CoLab, an initiative between UT and the City of Austin to prepare for and address climate change and its urban impacts. His research focuses on understanding and mitigating extreme weather hazards, such as heavy rains, hurricanes and extreme heat.

A priority for the UNESCO team is building AI tools and open datasets and sharing the knowledge and best practices that they have developed as part of the UT-City CoLab.

Globally, there are about 1,000 UNESCO Chairs. This is the third for the state of Texas and the second for UT. A research team at the Moody College of Communication is a UNESCO Chair in Communication.

Conferences & Workshops Recap

Jackson School faculty members and researchers helped lead important scientific gatherings in 2025. Learn more about each one.

Atmospheric and Urban Digital Twins Workshop

The TExUS Lab, which is led by Professor Dev Niyogi and in partnership with the UT-City CoLab, hosts a quarterly meeting to explore, synthesize and define atmospheric urban digital twins. These are simplified models that use artificial intelligence and machine learning to visualize complex atmospheric processes in the urban environment. The workshops have explored topics such as building energy models; city scale applications; and urban applications, operations, and scalability.

https://texuslab.org/audt

The North American Workshop on Critical Mineral Research, Development, and Education

Hosted by Associate Professor Marek Locmelis on Aug. 13–14, this conference brought together geologists, engineers, metallurgists, environmental scientists and political scientists to discuss a common goal: securing a U.S. supply of critical minerals. Videos of the speakers are available on the conference website.

https://www.jsg.utexas.edu/critical-minerals-workshop/

Advancing Land Modeling for Gulf Coast Resilience

Professor Zong-Liang Yang led a gathering of more than 250 scientists to discuss advances in land modeling, with a special focus on building resilience along the Gulf Coast. These models can help communities understand the forces that drive floods, droughts and other extreme weather events, so they can prepare. The conference was held on Aug. 14–15.

https://landmodelling.github.io/

The North American Workshop on Critical Mineral Research, Development, and Education. Photo: Robin Berghaus/Jackson School.

Advancing Land Modeling for Gulf Coast Resilience. Photo: Jackson School.

Sustainable Data Centers in Texas Workshop

Power-hungry data centers are booming across Texas. Ning Lin, the chief economist at the Bureau of Economic Geology, hosted a workshop on how their growth can be managed in a sustainable manner that maximizes the economic benefit to Texas communities. Held on Sept. 18, the workshop convened industry leaders and policymakers and included discussions on energy, natural resources, permitting and workforce development. The formation of COMPASS, a new data center-focused research consortium, was also announced at the workshop. (See story, page 32).

https://compass.beg.utexas.edu/

Distant Worlds, Neighboring Opportunities: The 9th Interstellar Symposium

The Interstellar Research Group, an advocacy group for interstellar/deep-space exploration, convened in Austin on Oct. 12–15 for their annual symposium. Ken Wisian, who recently retired as the associate director of the Bureau of Economic Geology's Environmental Division, was a co-partner of the event and spoke about space conflicts and war. Research Professor Don Blankenship and Research Associate Professor Duncan Young presented on NASA's Europa Clipper mission.

https://irg.space/2025-irg-9th-interstellar-symposium/

Research and teaching experiences from faculty members and students, in their own words.

Investigating Fault Activity in Nepal

By Madison Preece, doctoral student

Last spring, I traveled to central Nepal to investigate interactions between tectonics and surface processes. Joining me was Department of Earth and Planetary Sciences Chair Danny Stockli, University of Kentucky Associate Professor Ryan Thigpen, and graduate student Izzy Muller. We collaborated with Ananta Gajurel and Bhairab Sitaula from the School for International Training in Nepal.

The data from this field work will inform whether there has been recent fault motion near the base of the high Himalaya, which would indicate that fault activity has shifted from the southern front of the orogen towards the range interior, likely in response to focused erosion brought on by seasonal monsoons.

This would not only provide evidence for controversial ideas about tectonic and surface process interactions, but also indicate much higher geohazard risks for people living near the recently active fault. Interactions between rapid tectonic and surface processes were evident by the terraces standing hundreds of feet tall, the landslide scars covering the hillslopes, and, of course, the 8,000-meter-high peaks towering in the sky.

While these are scientifically fascinating, what struck me most when studying these processes is the devastating impact that they have on Nepali communities and the resilience that the Nepali people show by adapting their lives to deal with the aftermath.

The steep river valleys are filled with hundreds of small villages, many of which we stayed in throughout our field season, all of which were at risk for major geohazards. We saw several villages built upon landslide deposits and actively creeping hillslopes, while others were at the base of overly steepened hillslopes that appeared to be one heavy rain away from a massive landslide event.

One of the most impactful examples of geohazard consequences was walking up the extreme relief of the Langtang Valley, where a landslide buried a village of 300 people during the 2015 Gorkha Earthquake.

We will analyze bedrock and terrace samples collected this season for petrochonologic and thermochronologic data, which, when combined with structural and geomorphic maps, will inform the timing and location of fault activity within central Nepal. We hope that this information will be utilized to develop hazard mitigation strategies for at-risk Nepali communities; however, the socioeconomic status of Nepal will likely make it challenging to implement preventative measures.

Opposite page: Bedrock incision in response to rapid tectonic uplift produces this deeply incised river gorge in the Kali Gandaki River, Nepal. Photo: Madison Preece.

Above, left: The UHRP cohort visits Fiona, an ichthyosaur fossil from the Early Cretaceous, in the Natural History Museum Río Seco, in Punta Arenas, Chile. Photo: Matt Malkowski.
Above, right: Christina Raymond makes a heart in front of the Perito Moreno Glacier, Argentina. Photo: Christina Raymond

Spring Break in Patagonia

By Christina Raymond, B.S. 2025

This past spring break, the 2024–2025 Undergraduate Honors Research Program (UHRP) cohort took a trip through Chile and Argentina, exploring the wonders of Patagonia. Although I went into this trip with only a little Spanish in my vocabulary, I came out of it at the same level of Spanish proficiency but with a lot more knowledge on another big aspect of the region: its geology. I made so many memories on this trip, but I had tres favorites.

One of my favorite experiences on this trip was seeing Mount Fitz Roy in El Chaltén. Now if you're familiar with the Patagonia brand, you would know I am talking about the inspiration for its logo. The jagged, protruding mountains stood tall as the sun set on our first day in Argentina. Luckily, the sky was super clear that day, giving one of the best views of the granite mountains.

Another very exciting memory I have was seeing the Perito Moreno Glacier. I have never seen a glacier in real life so to say I was excited would be an understatement. It was so interesting learning about how the glacier is relatively stable and one of the largest in the Southern Patagonian Ice Field. If you paid attention long enough, you could also catch pieces of the glacier breaking off and slamming into the freezing water below.

Lastly, maybe one of the most memorable moments to me, was seeing Fiona. Fiona is a pregnant ichthyosaur that was preserved and fossilized. The paleontologist in charge of Fiona, Judith, actually showed us Fiona's fossil and talked through the process of finding and collecting her. It was so interesting learning the intricate details preserved in such a unique fossil and to essentially touch history.

It's still hard to believe that I was able to be on this incredible trip. Everything about Patagonia was incredible and there are so many memories that I could talk about for hours. I am so grateful to the UHRP and the Jackson School for allowing me to have the experience of a lifetime.

Wildland Urban Interface: Prescribed Burn with the Austin Fire Department

By Allysa Dallmann, doctoral student

Central Texas is one of the most fire vulnerable regions nationally. How and what type of meteorologic information can help the wildfire operations in Central Texas is a topic of immense significance as we develop translational data products for city departments to use as part of the Jackson School of Geosciences—and UT City CoLab partnership. This data for decisions framework is essential in City operations, especially when it comes to the Wildland Urban Interface (WUI).

This past summer, I went out with the Austin Wildfire Divisions team to conduct a prescribed burn to better understand the operations and decision-making that are in play for fires in the WUI. My research focuses on understanding the knowledge gaps that exist with the accessibility of meteorological information and needs in city operations to aid in future hazard mitigation and planning. The prescribed burn was located in Buda, Texas, on a property owned by Austin Water.

The intent of the burn was to introduce frequent fire for water restoration and aquifer recharge for the water that feeds into Barton Springs. Prescribed burns are methodically planned out and take into account weather conditions to reduce the risk of wildfire or unexpected fire behavior. The burn boss will request a spot weather forecast and weather conditions and consistently will follow up and check conditions before providing the "go-ahead" on conducting the burn.

Important parameters that are considered for the burn include temperature, atmospheric and surface moisture, wind gusts, direction, and speed, and potential for ignition. Our team was responsible for providing aerial coverage of visual and thermal imagery through a drone of the burn plot, along with taking weather measurements every hour to monitor for any condition changes.

Throughout the burn, the weather remained humid and cool with temperatures averaging around 90˚F and humidity around 60%. Winds also remained calm coming from the southeast, and gusts were around 10 mph. Wind plays an important role in fire dynamics and smoke plumes. During the burn, the burn boss monitored the wind relative to the ignition teams or any neighboring properties to ensure neither team is "smoked out." If not enough lift or atmospheric mixing is present, it can result in the burn to stop. Additionally, the wind is important as it can aid in the spread of the fire and for it to jump the line. The operation of the burn is performed by burning a black burn line, which goes around the perimeter of the burn plot. This is a roughly 10-foot-wide burn that allows the team to monitor fire behavior and develop a buffer before igniting the entire plot. Two ignition teams work in tandem around the border, then meet at the end to set the rest of the plot off.

Prescribed burns are only one facet of AFD Wildfire's operations, but an important one that also involves large coordination from the city to county level. Weather conditions are an essential and key facet of these operations as they are a key component of wildfire risk. Knowledge and understanding of that risk are essential in mitigating and preventing wildfires.

This activity is part of an unique UT City CoLab partnership the Jackson School faculty are leading and has been supported through a NIST appropriated project through U.S. Rep. Doggett for UT. The team is creating a data decision tool which is also a part of my Ph.D. work.

Opposite page, above: Allysa Dallmann (left) and a UT Austin Wildflower Center wildland firefighter in front of a plot from a prescribed burn conducted by the Austin Water and the Austin Fire Wildfire Division.
Opposite page, below: Dallmann observes prescribed burn operations as the ignition teams burn through the perimeter and monitors for spot fires.
Photos: Braniff Davis/ Austin Fire Department.

Teaching in the Andes Mountains of Argentina

By Brian Horton, professor

A November 2024 field trip to Argentina explored new ideas on the generation of the Andes Mountains. The 10-day trip investigated connections among Andean uplift, surface erosion, and sediment accumulation in adjacent basins of the Mendoza and San Juan provinces of western Argentina.

Students studied marine and nonmarine clastic deposits of the Neuquen foreland basin and brittle structures of the Precordillera fold-thrust belt to assess the role of flat-slab subduction, orogenic cyclicity, and arc magmatism in generating a complex stratigraphic record punctuated by regional unconformities. Lively discussions focused on the additional effects of climate, sea level, and tectonic inheritance. Integration of sediment provenance and thermochronological results with surface and subsurface data provided critical thinking exercises and a real-world perspective that students will carry forward into their geoscience careers.

The trip was the culmination of a semester-long "hybrid" course (GEO 383U: "Dynamic Field Stratigraphy") that incorporated lectures by Professor Brian Horton alternating with student-led presentations and critical discussions of the latest research on the sedimentary geology and tectonics of the Andes. Assistant Professor Matt Malkowski joined the class meetings and the field trip, which ended with an exceptional Thanksgiving dinner. Feedback from the students underscored their enthusiasm for the course format and the field experience:

- "This was the best class I have ever taken. I have never learned more in such a short period of time. I think the presentations along with the field trip were engaging and really allows for critical thinking."
- "Having a mix of lectures and student presentations was super helpful. I learned more during our 10-day field trip than I could have learned in an entire year's worth of class."
- "Everything about the course helped me to learn. Presenting on papers and listening to other students present are great ways to learn complex topics. And getting out into the field is a great way to put together a lot of the topics covered in the class."

Above: Students Emily Launderville and Madison Preece view Paleozoic-Triassic sandstone and mudstone deposits in Rio Atuel Canyon, Argentina.
Photo: Jack St. Peter.
Below: Cerro Aconcagua (highest peak in South America), which is part of La Ramada fold-thrust belt, near the Chile-Argentina border. Photo: Isabel Johnson.

Research and Outreach Program Returns to Jamaica for Second Year

By UT Associate Professors Ashley Matheny, Rowan Martindale and Melissa Kemp (College of Natural Sciences)

GEOPAths GO Jamaica is an NSF-supported program to introduce students to the geosciences by working on conservation projects with communities in Jamaica. This project was inspired by friendship and camaraderie. PIs Rowan Martindale, Melissa Kemp and Ashley Matheny were already conducting research in Jamaica and sought an avenue to collaborate with each other while also exposing students who would not typically have an opportunity to conduct Earth science research to the field. Our fourth PI, Leah Turner, is a friend and social scientist who is studying the impact of these field experiences on the academic and career trajectories of our student participants.

Undergraduate and graduate students from the U.S. and Jamaica collaborate with researchers and conservation experts to solve environmental problems. The research team meets throughout the summer and spends 2-3 weeks in Jamaica working with local colleagues to study coastal ecosystems. Our research focuses on modern coastlines, integrating research on coral reefs, river chemistry, mangrove forests, and other ecosystems as well as paleontological records of Jamaica's past ecosystems (Pleistocene reefs and fossil terrestrial communities). Geoscience is often at the intersection of many different disciplines, so our activities combine hydrology, chemistry, biology, oceanography, paleontology, ecology, and other Earth sciences to connect integrated environmental systems and understand the natural world at the Jamaican coastline. The team works closely with the locals, both scientific experts and local community members, to develop sustainable goals for healthy Jamaican coastlines and communities while teaching everyone about geosciences. These unique experiences can be incredibly meaningful to the students and community members.

This is our second year of the program. The team included partners from The University of Texas at Austin; The University of the West Indies (UWI), Mona; Georgia Institute of Technology; and the UWI Discovery Bay Marine Lab.

Above: The GEOPAths GO Jamaica group ready to explore the Green Grotto Caves in St. Ann, Jamaica. From left to right are Isaiah Bolden, Megan O'Quin, Ava Turner, Daniela Palazuelos (front), Alissa Tory (back), Kelsea Esquivel, Dominick Williams, Melissa Kemp, Curtis Lawrence III, Ashley Matheny, Andrew Green and Rowan Martindale. Photo: Rowan Martindale

Below left: The GEOPAths GO Jamaica team visits YS Falls in St. Elizabeth, Jamaica. From left to right are Kelsea Esquivel, Aaliyah Alexander, Curtis Lawrence III, Andrew Green, Dominick Williams, Daniela Palazuelos and Talita Gomes. Photo: Rowan Martindale.

Below right: The GEOPAths GO Jamaica leaders at the Discovery Bay Marine Lab in Trelawny, Jamaica after 36 hours of sampling reef water chemistry. From left: Melissa Kemp, Rowan Martindale, Ashley Matheny, Debbie-Ann Gordon-Smith, Denise Henry and Isaiah Bolden. Photo: Talita Gomes.

Neelarun Mukherjee (left) and University of Michigan Professor George W. Kling

Doctoral Student Research Recognized by AGU

Neelarun Mukherjee, a doctoral student in the Department of Earth and Planetary Sciences, was recognized with a 2024 Outstanding Student Presentation Award from the American Geophysical Union. The winners are selected based on research quality and students' ability to effectively communicate their research. Mukherjee is studying groundwater flow and carbon transport in Arctic permafrost with Professor M. Bayani Cardenas.

Touma Wins Women in Science Incentive Prize

Danielle Touma, a research assistant professor at the University of Texas Institute for Geophysics, was one of five scientists named a 2024 Women In Science Incentive Prize winner by The Story Exchange, a nonprofit media platform. This grant program supports women scientists working to combat the effects of climate change. Each winner was given $5,000 to continue their work. The winners were selected after a rigorous scientific review by judges from several universities, as well as an assessment by The Story Exchange editors. Touma studies how climate variability and human activity influence extreme weather events.

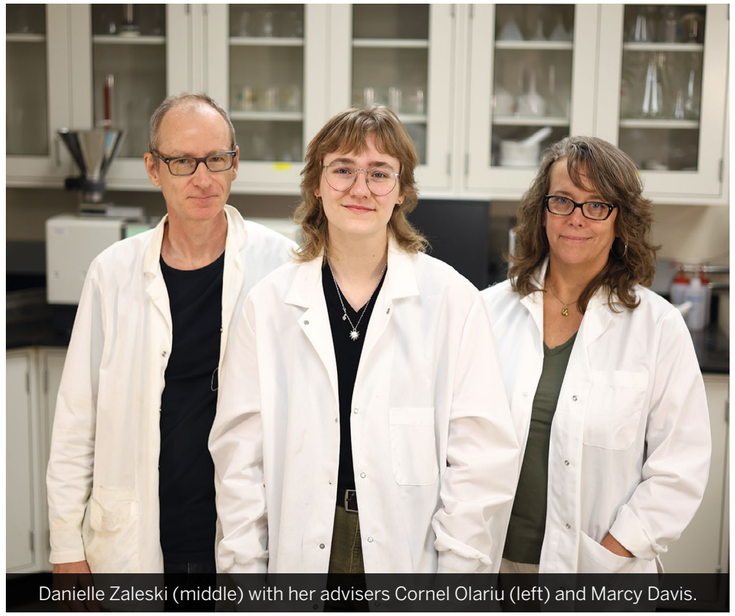
Goudge Leads CIFAR Research Group

Tim Goudge has been named a co-director of a geosciences research group at CIFAR, a private research foundation based in Canada.

The group—called Earth 4D: Subsurface Science & Exploration—is made up of 17 interdisciplinary researchers studying Earth's subsurface, the water cycle, the energy transition, planetary exploration, and space and time on a changing planet. They meet twice a year to present and discuss new findings.

As co-director, Goudge will help set the intellectual direction of the program, make research project recommendations, and bring in guests to help bridge gaps and catalyze discussions among researchers.

Through his involvement with Earth 4D, Goudge has also received seed funding to study the Mackenzie River delta in the Canadian Arctic, which could serve as an analog for how similar features on Mars were formed.



Danielle Zaleski (middle) with her advisers Cornel Olariu (left) and Marcy Davis.

Undergrad Researcher Recognized by UT President

Danielle Zaleski is The University of Texas at Austin President's Student Employee of the Year.

The award is often given to students excelling in administrative positions at UT, which make up most of the job opportunities available to undergraduates on the UT campus. Zaleski, however, was chosen based on her aptitude as an undergraduate researcher.

For the past 2 ½ years, Zaleski has worked with Jackson School scientists to study the buildup of microplastics in local lakes. She is now continuing her research as a master's student at the Jackson School.

"She's a real self-starter in terms of her science, and she is really good at it," said Marcy Davis, one of Zaleski's advisers and a research engineering scientist at the University of Texas Institute for Geophysics.

The Jackson School has prioritized providing work opportunities for undergraduate students in research labs, providing payment on a par with other UT administrative positions. This has led to more than 100 undergraduate students at the Jackson School working in research positions as of Fall 2025. As Zaleski and her award show, this opportunity can open the door to excellent scientific contributions.

"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 kinds of experiences if they weren't presented to me here."

Davis received the award from UT President Jim Davis in April. She also received the undergraduate student research award at the Jackson School's annual student research symposium. (See story, page 85.)

Europa Clipper Team Wins Astro Award

The NASA Europa Clipper Mission was named among the most innovative, inspiring and important missions of 2024 at the second annual Astro Awards. In January 2025, Krista Soderlund, a research associate professor at the University of Texas Institute for Geophysics, received the award on behalf of the team at a ceremony in Austin.

Soderlund was part of the development team for Clipper's ice penetrating radar instrument REASON, which is currently on its way to Jupiter's icy moon Europa, where it will peer beneath the moon's icy shell for signs of a liquid water ocean and ingredients for life.

The Astro Awards are presented by Everyday Astronaut, a media outlet that covers and promotes space exploration.

Jake Jordan (second from right) with Mati Carbon team members

Alumnus's Company Wins XPRIZE

A Longhorn is changing the world yet again.

The Houston-based company Mati Carbon recently won the $50 million grand prize from the XPRIZE competition in carbon removal. And leading the company's science team to success as the chief science officer was Jake Jordan, an alumnus of the Jackson School of Geosciences (Ph.D. 2017).

The XPRIZE is a global science competition focused on solving some of the world's most pressing problems, with competitors having to meet challenge milestones and have their methods analyzed by subject matter experts. Mati Carbon was among the four finalists that successfully removed more than 1,000 net tons of carbon dioxide (CO_2) in the final year of the four-year carbon removal competition, which began with over 1,300 teams from around the world.

Mati Carbon uses enhanced rock weathering to remove CO_2 while increasing crop yields for farmers in India and Africa who farm on small plots without industrial fertilizers or high-tech machinery.

The company spreads pulverized volcanic rocks onto agricultural fields. As the rock is weathered away, it undergoes chemical reactions that both trap CO_2 from the atmosphere and release mineral nutrients that crops need to thrive. The company tracks the volume of stored CO_2 and then sells carbon credits to corporations with net zero goals.

As a doctoral student at the Jackson School, Jordan worked with Professor Marc Hesse to shed light on the transport of geochemical tracers in melts. 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.

Winners of 14th Annual Jackson School of Geosciences Research Symposium

Undergraduate

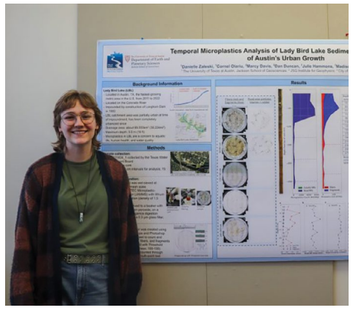
1st Danielle Zaleski: Temporal Microplastics Analysis of Lady Bird Lake, Austin Sediments: A Reflection of Austin's Urban Growth
2nd Caroline Mackin: Using Laser Grain Size Analysis to Investigate Changes in Surface Carbonate Producers in the Southeastern Atlantic (Walvis Ridge) across the Eocene-Oligocene Transition
3rd Joseph Sennello: Assessment of Factors Affecting the Development of Pyrite Disease in Devonian Chondrichthyan Fossils from the Cleveland Shale in the CMNH Collection

Master's Students & Ph.D. Aspirants

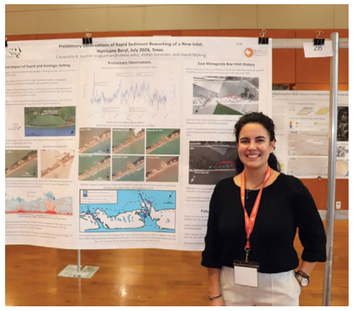
1st Cassandra Guzman: Preliminary Observations of Rapid Sediment Reworking of a New Inlet: Hurricane Beryl, July 2024, Texas
2nd Jonathan Amendola: A Geophysical Analysis of Kangerlussuup Sermia and Kangerluarsuup Sermia Glacimarine Sediments, Central West Greenland
3rd Alex Bonilla Franco: Weathering of the Archean Continents: Effect on the Lithium Isotope Composition of the Ancient Ocean

Ph.D. Candidates

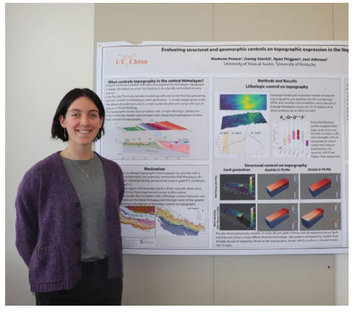
Co-1st Madison Preece: Investigating the Structural and Topographic Evolution of the Himalayas through Landscape Analysis and Thermokinematic Modelling
Co-1st Harsh Kamath: Assessing Heat Stress Along the Paris 2024 Olympics Marathon Route
3rd Jennifer Kohn: Siliciclastic Sediment Routing Driving Basin-Margin Evolution in Arid Mixed Siliciclastic-Carbonate Systems, Northern Delaware Basin



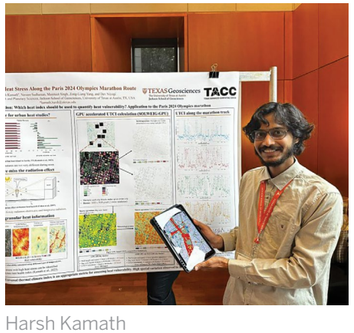
Danielle Zaleski



Cassandra Guzman



Madison Preece



Harsh Kamath

Yang elected an AGU Fellow

Professor Zong-Liang Yang was elected as an AGU fellow, joining a distinguished group of 52 individuals in the 2025 Class of Fellows. AGU, the world's largest Earth and space science association, bestows this honor annually to a select number of individuals who have made exceptional contributions.

Since the program's inception in 1962, less than 0.1% of AGU members have been selected as fellows each year.

Yang was selected for his exemplary leadership and outstanding scientific achievements, which have significantly advanced the understanding of land surface interactions and how they are represented in regional and global climate models.

Yang's models are used at a number of leading research institutions. This includes the U.S. NSF National Center for Atmospheric Research, NASA's Goddard Space Flight Center, and the U.S. National Water Center. This August, Yang convened a land modeling workshop that was attended by more than 250 scientists that explored the science behind extreme weather events, with a particular focus on coastal hazards.

In addition to improving models, Yang's research has led to insights on how extreme weather events are currently unfolding. For example, an analysis of soil moisture measurements from global hydroclimate data revealed that "flash droughts"—where soil dries out in a matter of days to weeks—are coming on faster.

Persad Wins CAREER Award From NSF

Geeta Persad, an assistant professor in the Department of Earth and Planetary Sciences, received a prestigious Faculty Early Career Development Program (CAREER) award from the National Science Foundation. The award recognizes early-career faculty members who have the potential to serve as academic role models in research and education.

Persad is a climate scientist who studies the interaction between air pollution and climate change. With the funding from this award, she will work on understanding how some of the same aerosol pollutants that produce smog contribute to climate risks such as extreme temperature, rainfall and humidity, particularly when they occur at the same time.

Aerosol particles impact temperature and moisture in the atmosphere but behave differently than greenhouse gases. Persad said that she expects this to affect future climate risks. However, until now this question has not been fully investigated.

"We really need to understand that whole picture rather than just thinking about everything in terms of greenhouse gas-driven climate change," Persad said.

CAREER awards include both a research and education component. On the education front, Persad plans to use this funding to develop a computational field trip and climate system modeling workshop with the Texas Advanced Computing Center.

Asteroid Named After Hanna

This year, planetary researcher Romy Hanna had an asteroid named in honor of her work on NASA's OSIRIS-REx mission—the first U.S.-led mission to successfully return an asteroid sample to Earth.

Hanna is a research associate in the Department of Earth and Planetary Sciences who studies the formation and evolution of carbonaceous meteorites and asteroids. She served as a participating scientist on the OSIRIS-REx mission to the carbonaceous asteroid Bennu, where she used the VIS-NIR and TIR spectral instruments to study the geologic history of the asteroid. She also found evidence of phyllosilicate decomposition on the asteroid caused by space weathering.

The asteroid—named 41003 Romy—is 5.5 kilometers in diameter and located in the asteroid belt between Mars and Jupiter. It was previously known by its provisional name, 1999 UZ12.

Mike Nolan, the science team chief for the mission, nominated Hanna, along with other members of the OSIRIS-REx mission, for the honor. The International Astronomical Union is responsible for assigning names to minor planets, comets, asteroids and other small astronomical bodies. They announced the naming of 41003 Romy on June 30, 2025, in their bulletin for the Working Group on Small Bodies Nomenclature.

Lowery Wins Prestigious Prize for Work on Mass Extinctions

From plate tectonics to the dinosaur extinction, scientific ocean drilling has led to major discoveries about the planet's history and evolution. Now, the field has a new rising star in Chris Lowery, who was named the 2024 Asahiko Taira International Scientific Ocean Drilling Research Prize recipient by the American Geophysical Union.

The prize, which recognizes an "outstanding, transdisciplinary research accomplishment," is the highest honor available for early-to mid-career scientists in the field of scientific ocean drilling.

Lowery is a research associate professor at the University of Texas Institute for Geophysics and teaches in the Department of Earth and Planetary Sciences.

One of Lowery's most substantial contributions has been a series of papers on how life responded to the mass extinction event that wiped out the dinosaurs. His current focus is on the Gulf of Mexico Loop Current, an ocean circulation pattern that flows directly into the Gulf Stream and has effects worldwide. He has led two geophysical surveys of the seafloor where the Loop Current's imprint is most visible and hopes to soon lead a major drilling expedition there to uncover whether the current was vulnerable to collapse during past global warming.

Lowery received the Asahiko Taira International Scientific Ocean Drilling Research Prize at AGU's Fall Meeting in December 2024 in Washington, D.C, where he also delivered a lecture on his Loop Current drilling project and how it demonstrates the broader importance of scientific ocean drilling.

Young Named Halbouty Distinguished Lecturer by GSA

The Geological Society of America (GSA) selected Michael H. Young, the associate dean for research at the Jackson School of Geosciences, to be this year's Michel T. Halbouty Distinguished lecturer.

Each year, the Halbouty Lecturer presents at the GSA annual meeting. Young's lecture at this year's meeting in San Antonio focused on the all-in costs, environmental and economic, of expanding and running an electrical grid for Texas, a topic of relevance to geological resources.

Young specializes in research at the intersection of energy, environment and economics. That includes one of his most recent research endeavors, the Comparing Electricity Options program, which analyzes the cradle-to-grave costs of different forms of electricity production. Young is also involved with the Texas Soil Observation Network, which monitors soil moisture at dozens of sites in Texas. These data are important for understanding drought and flood risks across the state.

As the associate dean for research, Young has played a pivotal role in advancing the school's new Strategic Investment Plan for research, or SIP. (See story, page 69).

Although still in its early stages, the plan seeks to bring together scientists across the Jackson School to advance shared research goals in three key areas: geohazards; energy, resources and global change; and planetary dynamics.

"Working across disciplines is challenging, but the rewards are enormous," said Young, who is also a research professor at the Jackson School's Bureau of Economic Geology. "Collaborating with engineers, economists, environmentalists and other stakeholders builds the kinds of comprehensive solutions needed to address complex societal issues."

Halbouty lecturers are selected by the GSA on the basis of career accomplishments and reputation. Young has been part of the Jackson School for 15 years. Before joining the school, he worked in academic institutions, private industry, and for the federal government.

Loucks Receives Highest Honor of SEPM's Gulf Coast Section

Bureau of Economic Geology Research Professor Bob Loucks was awarded the Doris Malkin Curtis Medal, the highest honor of the Gulf Coast Section of the Society for Sedimentary Geology. Loucks' areas of expertise include carbonate geology, reservoir characterization and pore network analysis. The medal recognizes his exceptional research contributions, which include publishing over 200 papers and advising dozens of students.

Awards

Common Abbreviations:

AAAS ..... American Association for the Advancement of Science
AAPG .....American Association of Petroleum Geologists
AGS ..... Austin Geological Society
AGU ..... American Geophysical Union
AMS.... American Meteorological Society
BEG ..... Bureau of Economic Geology
CPSH ..... Center for Planetary Systems Habitability
EPS..... Department of Earth and Planetary Sciences
GSA .....Geological Society of America
GSEC..... Graduate Student Executive Committee
JSG..... Jackson School of Geosciences
SEG.. Society of Exploration Geophysicists
SEPM.... Society for Sedimentary Geology
UT ..... The University of Texas at Austin
UTIG..... Institute for Geophysics

Students

August Aalto
Graduate Student Research Grant, Outstanding Mention, GSA
Graduate Seed Grant, National Center for Airborne Laser Mapping

Charles Amazon
Estwing Hammer Award, EPS

Jonathan Amendola
Outstanding Research Award (TERMINUS Team), JSG

Austin Barthel
Groundwater Field Methods Award: Undergraduate, EPS

Sophia Bautista
Outstanding Teaching Assistant, National Association of Geoscience Teachers

Lucia Bellino
Petrography Contest, Second Place, Graduate Students, EPS

Jason Bott
Undergraduate Research Fellowship, UT
Research Travel Award, UT

Sarah Brooker
Frank Perham Memorial Scholarship, Maine Mineral and Gem Museum

Tori Burnette
Petrography Contest, First Place, Undergraduate Students, EPS

Cameron Cummins
Masters Friday Best Speaker, Second Place, EPS

Nicole Czwakiel
Outstanding Graduate Teaching Assistant: Spring, EPS

Sohini Dasgupta
Leon and Pat Thomsen Scholarship, SEG
Outstanding Graduate Student Award, UTIG

Max Ehrenfels
Petrography Contest, Third Place, Graduate Students

Jacqueline Epperson
Outstanding Teaching Assistant, National Association of Geoscience Teachers

Kyle Fouke
Outstanding Graduate Teaching Assistant: Spring, EPS

Shuang Gao
Chevron Energy Graduate Fellow Award, UT
Endowed Presidential Fellowship, JSG

Fiona Gallice
Petrography Contest, Third Place, Undergraduate Students, EPS

Riley Garrett
Masters Friday Best Speaker, First Place, EPS

Fernando Pagán González
Groundwater Field Methods Award: Graduate, EPS

Gerson Gonzalez-Marin
Bianchi Boone Fellowship, JSG

Julie Hammons
Petrography Contest, Second Place, Undergraduate Students, EPS

Abby Harper
Outstanding Graduate Teaching Assistant: Fall, EPS

Eric Hiatt
Ewing-Worzel Fellowship, JSG

Josh Jennings
Scholarship, South Texas Geological Society

Quinn Johnson
Petrography Contest, First Place, Graduate Students, EPS

Tanner Johnson
Best Poster Award, Contemporary Advancements in Statistics and Extremes, University of Missouri

Ira Kadam
Estwing Hammer Award, EPS

Samantha Kaspar
D. Ray Jones Scholarship, APWA Southeast Texas
Don R. Boyd Endowed Presidential Scholarship, JSG
Texas Groundwater Association's Scholarship Foundation Scholarship, TGWA
Kent Field Course Scholarship in Hydrology, JSG

Shokoufeh Khojeh
Research Participation Appointment, U.S. DOD

Isabelle Lambert
Student Service Award, GSEC

Talia Maldonado
Sustainability Science Research Award, Furman University

Jacob Margoshes
Best Student Oral Presentation Award for the 2024 GeoGulf Convention, Gulf Coast Association of Geological Societies and Gulf Coast Section SEPM

Morgan Mellum
Student Research Award, GSA Soils and Soil Processes Division

Nico Mendoza
Estwing Hammer Award, EPS

Carson Miller
Gale White Fellowship

Peter Miller
Ewing-Worzel Fellowship, JSG

John A Moretti
Honorary Award Winner, American Federation of Mineralogical Societies Scholarship Foundation

Neelarun Mukherjee
Travel Grant, U.S. DOE
Future Investigators in NASA Earth and Space Science and Technology Fellowship, NASA
Outstanding Student Presentation Award, AGU Fall Meeting, AGU
First Place, Geoscience Hackathon on computational reproducibility, UT

Izzy Muller
Outstanding Graduate Teaching Assistant: Fall, EPS

Claudiu Nistor
Endowed Presidential Fellowship, JSG
Summer Excellence Fellowship, UT

Ema Parker
Gale White Fellowship

Mikayla Pascual
Outstanding Research Award (TERMINUS Team), JSG

Medha Prakash
Lewis and Clark Field Scholar in Astrobiology, American Philosophical Society
GRFP Honorable Mention, NSF

Veronika Redensek
Albert W. and Alice M. Weeks Graduate Fellowship in Climate and Surface Processes, JSG

Angelica Reyes
Estwing Hammer Award, EPS

Sabrina Anne Reichert
Geophysical Society of Oklahoma City Scholarship, SEG

Abby Rodionov
Estwing Hammer Award, EPS

Akshika Rohatgi
First Place, Geoscience Hackathon on computational reproducibility, UT

Kaitlin Schaible
Outstanding Graduate Student, UTIG

Ashlee Siddall
Student Research Grant, SEPM
Outstanding Graduate Teaching Assistant: Fall, EPS

Adan Silva
Student Research Grant, SEPM

Patty Standring
Ewing-Worzel Fellowship, JSG

Xinxin Sui
Best Ph.D. Talk, 2024-2025, EPS

Victoria L. Todd
University Continuing Graduate Student Fellowship, UT

Abby Trevino
Scholarship, South Texas Geological Society

Abigail Lynne Tucker
Michael S. Johnson Scholarship, RMAG Foundation

Casey Vigilia
Outstanding Research Award (TERMINUS Team), JSG

Anna Vu
Scholarship, South Texas Geological Society

Olivia Wachob
Outstanding Graduate Teaching Assistant: Spring, EPS

Kayla White
Endowed Presidential Scholarship, JSG

Ashley Lauren Whorton
James and Ruth Harrison Scholarship, SEG
Barbara McBride Memorial Scholarship, SEG

Danielle Zaleski
Student Employee of the Year, UT

Faculty and Researchers

Jay Banner
Annual Cesar Chavez "Si Se Puede!" Award, Recuerda a César Chávez Committee

Jaime Barnes
Joseph C. Walter Jr. Excellence Award, JSG

Thorsten Becker
Knebel Teaching Award: Teaching Innovation, EPS

Kenny Befus
Community Partnership Award, JSG

Edna Rodriguez Calzado
2024 William L. Fisher Prize for Excellence in Research, BEG

Ginny Catania
Outstanding Research Award (TERMINUS Team), JSG

Marcy Davis
Outstanding Research Award (TERMINUS Team), JSG

Ian W. Dalziel
40 Years of Service, UT

Tim Dooley
Best poster award in geological technology at IMAGE 2024, AAPG/SEG

Dan Duncan
Outstanding Research Award (TERMINUS Team), JSG

Peter Flemings
Knebel Teaching Award: Teaching Innovation, EPS

John Goff
Outstanding Research Award (TERMINUS Team), JSG

Cyril Grima
Outstanding Researcher, UTIG

Sean Gulick
Director's Circle of Excellence, UTIG
Outstanding Research Award (TERMINUS Team), JSG

Kelly Hattori
Monroe G. Cheney Science Award, Southwest Section AAPG

Doug Hemingway
Outstanding Early Career Researcher, UTIG

Brian Horton
Director's Circle of Excellence, UTIG

Seyyed Hosseini
Joseph C. Walter Jr. Excellence Award, JSG

Perianne Johnson
Outstanding Postdoc, UTIG

Benjamin Keisling
Outstanding Educator Award, JSG
Outstanding Research Award (TERMINUS Team), JSG

Charles Kerans
Knebel Teaching Award: Field/Experiential Education, EPS

Luc Lavier
Outstanding Educator Award, JSG

Robert G. Loucks
Doris Malkin Curtis Medal, Gulf Coast Section of SEPM

Chris Lowery
Director's Circle of Excellence, UTIG
Asahiko Taira International Scientific Ocean Drilling Research Prize, AGU

Jessica Maisano
20 Years of Service, UT

Craig Martin
Knebel Teaching Award: Undergraduate Upper Division Course, EPS

Rowan Martindale
Geobiology & Geomicrobiology Division Post Tenure Award, GSA

Susanne Morrison
Eleanor Picard Excellence Award, UTIG

Dev Niyogi
UNESCO Chair in AI, Water and Cities: Open Systems-Innovative Solutions, UNESCO
Fellow, Indian Meteorological Society

Abouzar Mirzaei Paiaman
Outstanding Technical Reviewer Award, SPE
Nominee for Frontiers Planet Prize, Frontiers Research Foundation

Camille Parmesan
Frontiers of Knowledge Prize in Climate Change and Environmental Sciences, BBVA Foundation
Jury Prize, Mimesis Documentary Film Festival, Honorary Doctorate from the University of Stockholm

Geeta Persad
Faculty Early Career Development Program Award, NSF

Cornelia Rasmussen
Director's Circle of Excellence, UTIG

Daniella Rempe
Knebel Teaching Award: Introductory Course, EPS

Bridget Scanlon
Outstanding Research Award, JSG

Mrinal Sen
Overseas Chair Professorship Lecture, Indian National Science Academy tour
Knebel Teaching Award: Graduate Course, EPS

Mark Shuster
Outstanding Service Award, JSG

Katie Smye
Public Service Award, AAPG
Tinker Family Best Publication Award, BEG

Krista Soderlund
Director's Circle of Excellence, UTIG
Innovate, Inspiring and Important Mission Award (NASA Europa Clipper Team), Astro Awards

Danielle Touma
Women In Science Incentive Prize, The Story Exchange

Jason Visser
10 Years of Service, UT

Zong-Liang Yang
Fellow, AGU

Michael Young
Michel Halbouty Distinguished Lecturer, GSA

Staff

Jessica Woollard Adair
Staff Excellence Award, JSG

Mohsen Ahmadian
15 Years of Service, UT

Melissa Armstrong
Community Partnership Award, JSG

Mark W. Blount
25 Years of Service, UT

Dillon P. Buhl
10 Years of Service, UT

Tiffany L. Caudle
25 Years of Service, UT

David L. Carr
20 Years of Service

Ponien Chen
10 Years of Service, UT

Nancy A. Cottington
25 Years of Service, UT

JJ Dupont
Outstanding Support Staff, UTIG

Andrew P. Faigle
30 Years of Service, UT

Claudia Garza
Outstanding Service Award (Jackson School Development Team), JSG

Phyllis Gesch
Outstanding Support Staff, UTIG

Elizabeth Gibson
Outstanding Service Award (Jackson School Development Team), JSG

Jennifer Jordan
Staff Excellence Award, JSG

Talia D. Jurgens
30 Years of Service, UT

Kim R. LaValley
15 Years of Service

Brandon Minton
10 Years of Service, UT

Gregory C. Ng
15 Years of Service, UT

Constantino Panagopulos
Outstanding Research Award (TERMINUS Team), JSG

Kyleen A. Piejko
15 Years of Service

Georgia Sanders
15 Years of Service, UT
Outstanding Service Award (Jackson School Development Team), JSG

Marissa Stubbe
Outstanding Service Award (Jackson School Development Team), JSG

Jeff Stuenkel
20 Years of Service, UT

Kristen Tucek
Outstanding Service Award (Jackson School Development Team), JSG

Veronica Vasquez
20 Years of Service, UT

Courtney Vletas
Outstanding Service Award (Jackson School Development Team), JSG

Nick Warrington
Outstanding Service Award (Jackson School Development Team), JSG

Andrew West
Outstanding Service Award (Jackson School Development Team), JSG

Jessica Yeager
Staff Excellence Award, EPS

Promotions

Fred Beach
From Assistant Professor of Practice to Professor of Practice

Yangkang Chen
Research Assistant Professor to Research Associate Professor

Chris Lowery
From Research Assistant Professor to Research Associate Professor

Kehua You
From Research Assistant Professor to Research Associate Professor

Cyril Grima
From Research Assistant Professor to Research Associate Professor

Mary Poteet
From Assistant Professor of Practice to Associate Professor of Practice

Lorena Moscardelli Leads Bureau of Economic Geology

On March 17, 2025, Lorena Moscardelli became the director of the Bureau of Economic Geology and state geologist of Texas.

She brings to the position more than 20 years of experience in energy research in industry and academia, most recently leading the bureau's largest research program: the State of Texas Advanced Resource Recovery (STARR) program, which works to enhance the efficient production and profitability of energy and natural resources in Texas.

Moscardelli joined STARR in 2021, but her bureau connection stretches much further back. After earning a bachelor's degree in geological engineering from Central University of Venezuela, Moscardelli came to the bureau in 2003 as a doctoral student. She was there for 10 years as a student and researcher before accepting a position at Statoil (now Equinor), an international energy company, where she worked in research, exploration and field development in the Norwegian continental shelf, offshore Canada, and the Gulf of Mexico

Moscardelli is the bureau's ninth director and the first woman to lead the institution, which is the oldest and second-largest institution at The University of Texas, and is the State Geological Survey of Texas.

Founded in 1909 and long a leader in oil and gas and environmental research, the bureau now has major programs in hydrogen, critical minerals, groundwater resources and geothermal energy, and it is an international leader in geologic carbon capture and storage research. It is also a hub for cross-campus energy research, working closely with UT's Cockrell School of Engineering, Energy Institute, McCombs School of Business and the Kay Bailey Hutchison Energy Center.

Moscardelli said that among her priorities as bureau director will be to increase collaboration with partners inside and outside the university to tackle key energy and resource challenges of the future. She said she will also work to increase the bureau's role in the Jackson School's educational mission, including exploring educational opportunities for students and industry professionals.

Take a tour of the bureau's core collection and learn more about the critical research happening at the bureau, directly from Moscardelli herself.

Jessica Bent
Program Director of GeoFORCE

This spring, Jessica Bent joined GeoFORCE as its program director. She brings 13 years of experience as an educator and researcher to the role, and she believes that every student deserves an accessible high-quality pathway to achieve success.

Bent holds a Ph.D. in education (school improvement), a M.Ed. (higher education student affairs) from Texas State University, and a B.A. in communications from Southwestern University. She has published research in peer-reviewed journals.

Bent has deep professional roots in the Austin area. She served as director of research for the Charles Butt Foundation, leading a team of researchers in public opinion research on Texans' and teachers' perceptions and needs of the public education system and distributing their findings and recommendations to state legislative representatives. As program administrator of the Travis County Work-Based Learning/Summer Youth Employment Program, Bent helped to build positive and productive partnerships between businesses and the community, establishing and maintaining over 150 job sites for 750 student interns each summer. Within this program she especially sought to recruit business partners in STEM career fields to provide interns exposure and access to higher-paying careers. While working as the associate director of College Success Programs at the Ann Richards School for Young Women Leaders, Bent started the school's first college persistence program to continue strong relationships with alumni and aid them in their college success.

Richard Denne
Director of the Gulf Basin Depositional Synthesis Project, University of Texas Institute for Geophysics

This spring, Richard Denne became the director of the Gulf Basin Depositional Synthesis Project (GBDS), a long-running research partnership with the energy industry.

Prior to his role at GBDS, Denne was an industry geologist for over 25 years before joining Texas Christian University in 2016 as the Hunter Enis Chair in Petroleum Geology. He was also director of the TCU Energy Institute. As an energy geologist, Denne held senior positions at major oil and gas companies, including Exxon and Marathon Oil, where he worked on exploration and production of wells in deep water basins —including the Gulf of Mexico—and unconventional shale plays in Texas.

Denne has published extensively, including research on sedimentary deposits left behind by the Chicxulub impact. His current research focuses on organic-rich sediments from the Cretaceous and applying biostratigraphy to investigate Cenozoic and Mesozoic marine systems.

For 30 years, GBDS has been the go-to regional resource for oil and gas exploration in the Gulf of Mexico. Denne takes the helm as the program expands its research offerings to include carbon storage, geothermal, critical minerals, and hydrogen storage. Denne also plans to expand the participation of undergraduate and graduate researchers in the program.

Seyyed A. Hosseini
Associate Director of the Environmental Division, Bureau of Economic Geology

In September, Seyyed A. Hosseini was appointed to lead the environmental research programs at the Bureau of Economic Geology. Before that, Hosseini held a research professor role at the bureau for two decades, specializing in subsurface-flow modeling, carbon sequestration, and investigations targeting how machine learning applies to pressing geoscience issues.

The environmental teams include world-renowned experts focusing on carbon management, coastal studies, geologic hazards, geothermal energy, groundwater, induced seismicity, mineral resources, and the water-energy nexus. The division was previously led by Ken Wisian, who retired this fall.

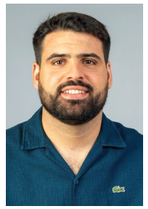
Hosseini has experience managing major science campaigns funded by federal agencies, industry and international organizations, and he has authored more than 100 peer-reviewed publications. He is actively involved with professional societies and advisory committees, with a vision focused on interdisciplinary innovation, sustainable resource management, and impactful science that serves Texas and beyond.

Daniel Alessi
Professor

Daniel Alessi, an aqueous geochemist and expert on lithium extraction, joined the Jackson School of Geosciences' Department of Earth and Planetary Sciences and Bureau of Economic Geology as a professor in May. He studies how lithium can be extracted chemically from salt flats and oil field brines. Before joining the Jackson School, Alessi held a faculty position at the University of Alberta for 12 years. For several of those years, he worked with a company called E3 Lithium that developed synthetic materials and other technologies that can extract lithium from sedimentary brines. Alessi also co-founded Recion Technologies, a startup in Edmonton, Alberta, which his former postdoc is now running as CEO. The company designed, scaled up and commercialized technologies to extract lithium from brines.

Seth Busetti
Research Associate Professor

Seth Busetti joined the Bureau of Economic Geology as a research associate professor in September 2025, working with the Center for Injection and Seismicity Research. His research focuses on the integration of structural geology, reservoir characterization, and geomechanical analysis, with an emphasis on understanding how structural architecture interacts with industry operations. He specializes in development of geologically informed geomechanics models combining traditional field and laboratory characterization techniques and computational modeling including finite element, boundary element, and discrete fracture network methods. Busetti earned a doctoral degree from the University of Oklahoma. Prior to joining the bureau, he worked for ConocoPhillips and Saudi Aramco in various R&D and technology support roles.



Naïm Celini
Research Assistant Professor

Naïm Celini is a research assistant professor at the Bureau of Economic Geology. He earned a Master of Science in geology from ENSEGID — Bordeaux INP (France) in 2016 and a doctoral degree in geology from the University of Pau and the Adour Countries (France) in 2020. He specializes in structural geology, salt tectonics, basin analysis and fold-and-thrust belts. Before joining the bureau in August 2025, Naïm spent four years working as a postdoctoral researcher at the University of Pau, the French Geological Survey and TotalEnergies.

Cameron Cummins
Computational Geoscientist

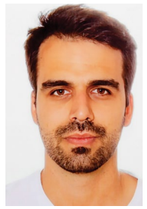
Cameron Cummins is a computational geoscientist for students and researchers in the Department of Earth and Planetary Sciences. He is a UT alumnus, having completed a Master of Science in geoscience at the Jackson School of Geosciences and a Bachelor of Science in computational engineering at the Cockrell School of Engineering. Cummins specializes in using open-source Python libraries to optimize big data workflows, using high-performance computing. His research focus is formally in climate modeling and software engineering. However, he has experience in developing software across multiple Earth and planetary science disciplines.

Marcus Gary
Research Associate Professor

Marcus Gary joined the Jackson School of Geosciences full time in March 2025, working primarily at the Bureau of Economic Geology, but also taking a leading role in teaching field hydrology classes at the Department of Earth and Planetary Sciences. Prior to this role, he taught as an adjunct professor for 14 years at the Jackson School and was a research scientist for the Edwards Aquifer Authority and U.S. Geological Survey. His research background focuses on karst hydrogeology. While completing his doctorate at UT Austin, Gary explored some of the deepest underwater cave systems on Earth, using robotic autonomous underwater vehicles. Marcus now conducts groundwater research primarily in Texas, using applied hydrogeologic methods to address water resource challenges in the state.

Tony Hollenback
Assistant Professor of Practice

Tony Hollenback, an environmental geochemist, joined the Department of Earth and Planetary Sciences in May as an assistant professor of practice. Hollenback focuses on teaching students in the Jackson School's environmental science program, which has undergone an enrollment boom in recent years. He is also managing the school's field equipment. Hollenback earned a bachelor's degree in chemistry from The University of Texas at Austin and spent a couple of years as a teaching specialist for various chemistry courses. He also has a doctorate from the University of Delaware, where he researched environmental soil analytical chemistry.



Ander Martinez-Doñate
Research Assistant Professor

Ander Martinez-Doñate is a geoscientist and data professional working at the intersection of geology, energy systems and sustainability. His work focuses on understanding the subsurface and applying that knowledge to energy and environmental challenges. Since 2022, he has been a postdoctoral researcher at the Bureau of Economic Geology, but was recently hired as a research assistant professor. His current projects focus on evaluating salt formations for hydrogen storage in human-made caverns and studying the impacts of produced-water disposal on subsurface systems. Both efforts aim to support safer and more sustainable practices in energy development and storage. He holds a bachelor's degree in geology from the University of the Basque Country, a master's degree in geophysics from the University of Barcelona, and a doctoral degree in energy systems from the University of Manchester.

Ben Rendall
Research Assistant Professor

Ben Rendall works across field, subsurface and remote sensing datasets to better understand the processes and products that characterize mixed carbonate-siliciclastic depositional systems. He started his geology career in 2013 with ExxonMobil Upstream Research Company's Carbonate Stratigraphy and Reservoir systems group. He then earned a doctorate from The University of Texas at Austin supervised by Professor Charlie Kerans. After spending the past two years as a research scientist in Germany at the University of Potsdam, Rendall has returned to the bureau as a research assistant professor with the Reservoir Characterization Research Group.

Christine Simurda
Assistant Professor of Practice & NextStep Geosciences Director

Christine Simurda joined the Jackson School of Geosciences as an assistant professor of practice in geoscience education and serves as the director of NextStep Geosciences, the school's summer research program for undergraduates interested in the geosciences. (The program was formerly called Research Traineeship Experience, or RTX.) In addition to this role, Simurda helps faculty members and students prepare effective research proposals, and is also developing new remote sensing courses.

Before joining the Jackson School, Simurda spent five years as a researcher at the Applied Research Laboratories at UT's J.J. Pickle Research Campus, using remote sensing data to interpret surface structures. She received a doctoral degree in geology and planetary science from the University of Pittsburgh, where she researched lava flows on Earth and Mars, using remote sensing techniques.

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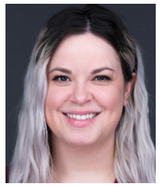

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The Texas Leadership Society is composed of a distinguished group of friends & alumni who have included The University of Texas at Austin in their estate plans. Estate gifts support faculty and research, provide scholarships and graduate fellowships, and keep libraries, laboratories and facilities up to date. We would like to recognize those members who have designated the Jackson School as their beneficiary.

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The Flawn Circle of Excellence recognizes friends and alumni who have given cumulative gifts of $1 million and above. Established in 2014, this society is named after Peter T. Flawn, former president of The University of Texas at Austin, professor emeritus at the Jackson School of Geosciences and lifetime member of the Geology Foundation Advisory Council.

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The Katie Society recognizes friends and alumni who have given cumulative gifts of $500,000 and above. It was established in 2014 in fond remembrance of Katherine G. "Katie" Jackson, beloved wife of the late John A. Jackson. Katie was a great philanthropist and Jack's partner in all things, including the creation and naming of the Jackson School of Geosciences.

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Julie & Franz Hiebert
Mindy & Jeff Hildebrand
David Hill
Janice Hill
Cody Hoffman
Ann St. Clair & Kirk Holland
Ann & John Howard
Terry Huffington & Ralph Dittman
Katherine & Gary Hummel
Emily & Philip Hunter
Tracy Hurst
Galadriel & Wade Hutchings
Angela & William Hutton
Julia Jackson
Janice & Russell Jackson
Debra & Eric James
Rebecca & Joe Jaworski
Mary Edrich & John Jeffers
Borden Jenkins
Anthony Johnson
Charlie Johnson
Douglas Johnson
Candice Johnson
Bonnie Jortberg
Alan Joyce

** Deceased*

Kristi & Steve Jumper
Erica & Josh Katz
Kristy & Micahel Kegerreis
Martha & Paul Kemp
Suzie & Bob Kent
Nahid & Ali Khataw
Robert Kier
Robert Killian
Justin Killingsworth
Jesse Kimball
Paul Kirby
Kathy & David Kirchner
Dianne Kline
Jan Knox
Tingwei Ko
Rick Kolb
Karyn Kondoff
Margaret Kroehler
Dhananjay Kumar
Linda & Richard Kyle
Tejashri & Jeff Kyle
Judith Lang & Lynton Land
Bruce Lander
Megan Larson
Butch Lawson
Rosa & Tom Layman
Darby Lee
Jennifer & Andrew Leeper
Ming Lei
Tara & Douglas Leonard
Philip Levasseur
Walter Light
Dunyu Liu
Trinity Lloyd
Tracy Walsh & Eric Long
Susan & Ken Longacre
Mark Longman
Yunling Lou
Steve Lovell
Wendy Weiss & Robert Mace
David Mahler
Rick Major
Bruno Maldonado
Linda Poyser & Mike Maler
Cristopher Marshall
Ali & David Martineau
Maria Martinez
Nicolas Massei
Amanda Masterson & David Ingold
Francine M. Mastrangelo
Ashley Matheny
Marcus May
Jonathan McCabe
Bruce McCommons
Krsiten & Dax McDavid
Carter & James McGuire
Jerry McNeish
Tip Meckel

Dalton Menn
Wayne Miller
Joan & Steve Mills
Laura Minor
Jacqueline & Ross Moczygemba
William Monroe
Destiny Montgomery
Didey Montoya
Terry Moody
Claudia Mora
Frank Morgan
Shannon Morrison
Sassan Mouri
Tonya Green & Bill Muhlbauer
Maureen Mullarkey-Miller
Julia Murray
Lyndon Murray
MaryLynn Musgrove
Shreelakshmi & Chidambara Shashikiran
Hiroko & Yosio Nakamura
Jerry Namy
Laura & Naveen Nattam
Ken Neavel
Kim & Earl Nesbitt
John Newcomb
Janet Newman
Anne Nguyen
Linda & Lee Norris
Ashley & Ralph Oberlin
Robin Oliver
Elizabeth Orr
Katey Outka
Pamela & Eric Ovlen
Jeffrey Palmer
Petro Papazis
Dorothy & Malcolm Paterson
Amy Payne
Jennifer Pena
Dorothy & John Percy
Garner Peterson
Terry & Elliott Pew
Mandala Pham
Rick Phelps
Francis Pinkston
Oliver Pons
Kara Posso
Erin Poteet-Desai
Luke Primrose
Nancy & David Pustka
Kim & Robert Quarles
Mary & Charles Raby
Tara & Eric Radjef
Matalie Raia
Krsitie Ramlal
Matt Ramos
Marsha & Stanley Reece
Emily & Robert Reed
Vickie & Scott Reeve

Stephanie Reid
Cambria & Brian Reinsborough
Linda Rice
Ana & Scott Rice
Marsha & Gregg Robertson
Celina Romero & Paul Williams
Lillian Rosa
John Rose
Laura Rosenberg
Peter Rowley
Melinda Rozek
Cole Ruiz
Patricia & Gerald Rusthoven
Susan Salch Sanders
Georgia & Geoffrey Sanders
Maryjane & Bud Scherr
Arthur Schiff
Ashley McLain & Jerry Schmeil
Karen & David Schmidt
Ted Schulenberg
Jennifer & Robert Schwenker
Stephanie Scollard
Robb Scott
Marina & Robert Seitsinger
Tiffany & Carl Senft
Adela Ben-Yakar & Luis Sentis
Allison & Bryan Sethney
Na Shan & Yi Tao
Laura & Trey Shanks
Robin Shaver
Sam Shrull
Andrew Smith
Brian Smith
Michael Smith
James Smits
Kristen Harris & Max Snodderly
Virginia & Michael Solberg
Dorothy Sorensen
Pamela Speciale
Nina Staeben
Michelle Stocker & Sterling Nesbitt
Gail & Stanley Stoke
Richard Stoneburner
Juanita & Mike Strickler
Tianyi Sun
Christina Symons
Wendy Tamis
Larry Targosh
Carolyn Croom & John Tate
Shauna Taylor
Melinda Taylor & Jim Robertson
Claudia & Carl Teinert
Scott Thompson
Florence Thompson
Gwen Throckmorton
Patricia Toccalino
David Tolces
Elizabeth & Mike Tomsu

Barbara Wilson & Elliot Trester
Brenda Trevino
James Tsai
Kristen Tucek
Leah Turner
John Turner
Linda & Don Urbanec
Tammie Valentini
Jean-Paul Van Gestel
Kathryn & Matt Van Wie
Kara Vanghel
Eleine Vence
Joseph Versfelt
Katie Vignery & John Lawyer
Courtney Vletas & Will Hampton
Patricia Vollmar
Kris Voorhees
Frank Wagner
David Wahl
David Wallace
Diana Walters
Margaret & Steve Wang
Nick Warrington
James Weaver
Steve Weiner
Jeanne Weinman
Kellie Weir
Bonnie Weise
Pam & Rom Welborn
Mandy & Andrew West
Sheri & Jamie White
Steve White
Bruce Wik
Jeanene & Larry Williams
Mary Williamson
Cynthia Wong
David Wood
Patricia Speier & Chock Woodruff
Bill Woods
Arnold Woods
David Work
Susan Wygant
Pinar Yilmaz
Katherine & Michael Young
Eleanor & Steven Young
William Young
Dorri & David Zaleski
Alicia Zander & Aldolfo Valadez
Sarah Zellers
Robert Zinn
Greg Zwernemann

Associations, Corporations and Foundations

Ageron Energy, LLC
AIVE AI Systems
Altos Industries
Apache Corporation

Aramco Services Company
Bayswater Exploration & Production, LLC
Bentley Systems, Inc
Bickerstaff, Heath, Delgado, Acosta, LLP
Bryan Woodbine Purchasing, LLC
Chesapeake Energy Corporation
Cirrus Logic
ConocoPhillips
Continental Resources
Coral Energy, Inc.
Coterra Energy
Dell Corporate Services Corporation
Devon Energy Corporation
Diamondback Energy, Inc.
Enervest LTD
Eni S.p.A.
EOG Resources, Inc.
ExxonMobil
Formosa Petrochemical Corporation
Frontera Energy Colombia
H.E.B.
Hess Corporation
Highpeak Energy
Imagine Resources, LLC
Kolibri Energy US, Inc.
Kosmos Energy
Leo Lion
Matador Resources Company
Murphy Oil Corporation
ONEOK Foundation, Inc.
Petroleo Brasileiro S.A.
Quidnet Energy
Red Willow Production, LLC
Riley Exploration Operating Company
Ring Energy Inc.
Rohmtek
Roxanna Oil Company
Sabinal Energy
Sandia National Laboratories
Schlumberger Technology Corporation-GeoQuest
SM Energy Company
Solaris Water Midstream
Stantec
Statoil
Talos Energy
Targa Resources
Texaco
Texas Pacific Land Corporation
Thunder Exploration, Inc.
Trident Zoetic
Walter Oil & Gas Corporation
WaterBridge Operating, LLC
Waterloo Development, Inc.
Western Midstream

** Deceased*

1940

James Joyes (B.S. '48) says, "I'm still enjoying retirement after four years. Beverly and I are doing a lot of traveling. Am I the only one left of the class of 48?"

1950

Robert F. Travis (B.A. '57) writes, "I was in the class of 1956. I finally received my B.A. in 1957. It is a rare event when I see anything or hear something about or from members of either class. I hope they are just being quiet. I recently moved to a new house in Austin near 4 points. I would love to hear from anyone who is nearby."

1960s

Rubin A Schultz, Jr. (B.A. '61) writes, "Nancy and I are still enjoying our great grandkids – not much else new. I guess time is getting to us. We have not done any traveling this year except visiting relatives."

Richard Waitt (M.A. '70) says, "After 50.4 years with the USGS I finally retired end of May. But as Scientist Emeritus I continue to work from my still-stuffed office at USGS Cascades Volcano Observatory with same address and contact numbers. Mostly finishing off several part-done reports that had gotten stranded along the way but whose science has not been superseded (for few grad students these days do dedicated fieldwork). The field-based geology reports are about Mount St. Helens (MSH) May 1980 eruption, the great late Pleistocene Missoula floods in eastern Washington, and a large late Holocene flood in north Iceland. Five such reports currently in review or editorial production, many others still to come. At MSH I look forward to collaborating soon with UT Austin geo prof Jim Gardner. Retirement ironically allows more time and freedom to travel east of the Cascades to earlier research sites and region for 'touch-up fieldwork' on Pleistocene glacial & megafloods geology. Cynthia and I remain busy maintaining our park-like acreage in Vancouver, where each summer we host a pig roast that commemorates such a deed in late summer 1980 done in MSH's still-hot ash flows. Pleasure travel this year includes a Danube River cruise, a specialized rail journey about the Canadian Rockies, and a long rail circuit about western USA.

1970s

Charles A. (Chuck) Caughey (M.A. '73) writes, "Now VP on the HOA board fielding issues for our neighborhood of 1081 homes and staying active mentoring students on MS scholarships at JSG (1 for graduates of Indonesian universities, another supporting graduate study for students from GeoFORCE). Two of my Indonesian MS grads recently joined me at my fishing shack on Galveston Bay, Taufik Al Amin with his new wife Laras and Aya Shika Bangun. I also have a scholarship for 2-year community college graduates to get a BS in geoscience at Sam Houston State University, and first recipient Marcos Jiminez graduated and is now finishing MS studies at the Jackson School. Staying busy and time flies, so I must be having fun!"

Patricia W. Dickerson (B.A. '70, Ph.D. '95) writes, "The tectonic winds wafted me across the Tropic of Capricorn in October for an IGCP 735 field conference in Córdoba, Argentina. Endlessly intriguing lower Paleozoic rocks -- we were in the Precordillera, the area that propelled me into one of my ongoing projects (new publication in progress). The absence of boos and hisses following my talk was satisfying -- naturally, new questions arose, so I must return.

On the flight back to this hemisphere, in near-clear skies along the craggy Andes, a mesa-like Colombian glacier appeared close enough for reaching out the plane window and scooping snowballs (photo).

Still farther south, the old bones (pre-Ordovician) of Antarctica have beckoned -- fascinating first visit to the rocks of that continent. This visit is solely cerebral, though I'd love to set boots on the vagrant N. American rocks there. Collaborating with most congenial colleagues, we're in near-final throes of manuscript construction.

From the far-removed to the familiar, a couple of brain cells have been aimed west. Cohorts at Sul Ross State University, San Angelo State University, and I have proposed a Big Bend field trip for the GSA annual meeting this October -- pleasurable field checks, plotting/scheming sessions in Alpine. The field guide is now at page-proof stage -- it looks like a book(!).

Elsewhere in the cosmos, Martian landscapes conjure counterparts in New Mexico, fueling field-foray plans. Relishing field checks in northern NM with a dear friend and Mars researcher.

As always, the high points of the annual landscape have been the convergences with you -- in the field, at meetings, wherever. Looking forward to hearing your news!"

Ralph Kerr (B.A. '77) shares, "I am still living in Houston, and geology has become more of a hobby for me. Since retiring from Shell 15 years ago, I have built a second career as an executive coach, which has taken me to many interesting places, including an offshore facilities shipyard in Pori, Finland, an oil sands mine in northern Alberta, and a refinery outside Singapore. The more I see, the more I am grateful for the great education, the people I met, and many doors that opened because of my time at UT."

1980s

Steve Chang (B.S. '87) shares, "Enjoying retirement along the Brazos River! Nikki and I are enjoying retirement in our new home and looking forward to doing some traveling in the future."

Daryl Chicken (B.S. '88) shares, "Presently working for Stabil Drill as Cooperate Account Manager. Oldest daughter has finished her master's degree at Trinity College in Dublin, Ireland, and youngest daughter will complete her final year at the University of Texas in College of Communications focused on Speech Therapy. Volunteer as AADE Central Texas Chapter liaisons to UT Petroleum Engineer's Student Chapter. Still living in Magnolia, Texas."

Kevin Frenzel (B.S. '87) writes, "Well, I have finally decided to retire after over 40 years of professional experience including groundwater assessments and remediation, uranium exploration, and managing coastal restoration projects with the Texas General Land Office. I plan to spend the next phase of my life spending more time with my family and enjoying the coast. I can't thank the University of Texas enough for providing me the skills and education to pursue my career. Cheers!"

Steven Henderson (B.S. '81) says, "Starting the 10th year teaching physical geology, petroleum geology, structural geology, and formation evaluation at Texas Tech...in the Petroleum Engineering department. Go figure."

Charles Johnson (B.S. '83) writes, "Picked up a new deal in Bee County in 2025 which we will be working on through the fall. Planning on some infill drilling in our Cayuga Field for the Woodbine in Anderson County as well later this year. We've been improving our Live Oak County deal we picked up in 2024 which is now up to 40 bopd from 23 last year. Hanging on for some higher prices...we hope. Turning 65 this year with 42 years of full-time work behind me, all thanks to the great Geology program at UT Austin. Hook 'em!"

Marcus M. Key, Jr. (B.S. '83) writes, "My 5th and youngest child graduated from college in May, so Maria and I are empty nesters, sort of. We have 1.5 grandkids and are still enjoying life in Carlisle, PA when not travelling to see the kids. I'm in my 36th year of teaching at Dickinson College as the Joseph Priestley Professor of Natural Philosophy in the Department of Geosciences. I am still enjoying chasing fossil bryozoans around the world!"

Teresa Klump Carpenter (B.A. '86) says, "Since the oil market tanked when I graduated, I went back to UT and got a math degree. I applied for jobs everywhere and eventually got hired as a programmer at the Texas Water Development Board. After a few years there, I did the dot com shuffle and worked for several startups as a website developer. In the evenings, I pursued my passion for sports and coached volleyball and went to massage therapy school. I got laid off when Tivoli got assimilated into IBM and my position was eliminated. So next I worked as a fitness trainer, massage therapist and coach, applying my analytical skills in a different industry. A decade ago, I went to real estate school and became a realtor and am now a broker. I still do some fitness training, massage therapy, play lots of sports, and love the variety! Through it all, I'm still a rockhound. My husband and I own a small ski condo at Purgatory Resort, outside of Durango, Colorado, where I spent 3 weeks of my GEO 660 field camp mapping the area. The owner of Purgatory also owns Sipapu ski resort in New Mexico, where I spent the other 3 weeks of field camp! Small world. I still remember the song we wrote then - the '660 Blues.' I'm still pivoting - who knows what I will do next?"

Bruno Maldonado (B.S. '82) writes, "Hello to all my friends at the Jackson School of Geosciences and those still practicing geoscience. I continue to provide geoscience consulting services. Patricia keeps pressuring me to retire (maybe next year), but I do not see it as work. I still enjoy applying the science. Having worked the majority of my career internationally, most of my recent work has been in South Texas. I'm now looking at unconventional projects in South America. When I'm not consulting, I spend time with my 4 grandkids enjoying the outdoors at my mini-ranch. Perhaps most enjoyable is watching them play soccer, volleyball, basketball and baseball. I'm also involved in Off Road Racing as a Pit Crew Boss for my two sons' team 'Mondo Motorsports.' You can watch our videos on Instagram at @mondomotorsprts. We participate in UNLTD Offroad Racing

Series. We are currently in 1st place for the Series that includes The Mint 400 in Las Vegas, Nevada, The Parker 400 in Parker, Arizona and our last race for this Series is The California 300 in Barstow, California. If we place in the top three in Barstow, we will hold on to 1st place for the Series. A big hug to all you Geoscience Longhorns....See Ya!"

Gene Pisasale (M.A. '80) shares, "To all my Friends in the Jackson School of Geosciences Graduate Class of 1980: I'm reminded of a well-known person who lived centuries ago who was a businessman, a printer, an inventor, a scientist, a statesman and a Signer of the Declaration of Independence and the U.S. Constitution. That man was Benjamin Franklin; I'd say he had a varied career, one to be quite proud of. After working as a petroleum geologist for six years (1980-1986), I transitioned into the investment industry, working as an Investment Executive at first, then as a financial analyst and portfolio manager (earning my MBA Finance and CFA) covering the energy/natural resources industries. I enjoyed that very much, having opportunities to meet CEOs and CFOs of Fortune 500 Companies like Exxon, Chevron, Dow Chemical, Du Pont and many others. It was a fascinating transition and overall, a wonderful experience. I semi-retired and shifted gears a bit, helping a small family business for a while, then decided to pursue one of my first loves: history. So, I later earned a master's degree in American History and focused most of my efforts on writing about local and regional history in the Chester County/Philadelphia area. I am about to write my 12th book, which will delve into the lives and accomplishments of several well-known personalities who lived in this region from around 1725-1850. Writing and lecturing has been quite a lot of fun!! If any of you are visiting the Philadelphia area, stop in and see me. I live just down the road from world-renowned Longwood Gardens in Kennett Square, Pennsylvania. I keep in touch with Dr. Earle McBride, and he just turned 93!! God bless him. Wishing all my fellow graduate school classmates good health and many blessings. Sincerely, Gene Pisasale"

Jerry Schwarzbach (B.A. '83) says, "Still enjoying working in Tyler, ranching, flying, hanging with family and going to UT Football games."

Bruce Swartz (B.S. '82) shares, "I continue to work in the oil & gas industry as a consultant. Still sliding logs and supervising field operations. But not working the hours that I did in the past. Enjoying my time more and chasing grandchildren."

David N. Tolces (B.S. '85) writes, "Still practicing local government law in South Florida. Enjoyed travels in Italy this past April and along the Appalachian Trail around Roanoke, VA last summer. For those of you who hike the AT, my trail name is 'Geo.' For something different, I am off to hike a portion of the Camino de Santiago in August 2025. Wherever I travel or hike, I thank UT for giving me the education and appreciation for the geology that is all around me and underfoot. Looking forward to the UT/UF football game in Gainesville this fall. Hook 'em!"

William Barry Wethington (B.S. '85) says, "Wow, 40 years since graduation I retired in 2020 after working for BP and a short stint at Aramco. 27 years overseas was a blessing in so many ways. Celebrating my 40th wedding anniversary with three children and six grandchildren. I still consult a little and sit on a couple of boards. I have fond memories of my time at UT and all the great classmates."

1990s

Elaine Aradillas (B.A. '99) shares, "I received a minor in geology. I was able to use my knowledge in gemology when I was reporting at PEOPLE magazine and I spent time with jewelers to the stars. They were always impressed with my knowledge. After 15 years as a crime reporter at PEOPLE magazine in Los Angeles and New York, I have returned home to Texas where I have three documentaries in development, a crime podcast and I'm currently working on a book proposal. Thank you for being the rock-solid foundation I needed to pursue my dreams."

Christi Gell (B.S. '96) writes, "Christi & Charlie Gell – We just got back from an amazing trip to the Four Corners region, where we soaked up all the incredible geology and visited some fascinating archaeological sites. One of the highlights was Goosenecks State Park—a breathtaking, textbook example of a meandering river carving deep canyons. Christi makes a point to visit Dr. McBride and Dr. Lundelius at Westminster whenever she is in Austin (Earle just turned 93, and Ernie is now 97!). Charlie is starting a new job at Palo Alto Networks (cybersecurity) at the end of June, and Christi is still at Emerson, working with midstream and pipeline companies on software technologies for things like leak detection and pipeline integrity. The kids are doing well, and we have officially started looking at colleges for our oldest (!!). Hope everyone is doing great!"

David W. Hill (M.A. '93) says, "Dave retired from the State of Texas in 2017. This included time at TCEQ and The Railroad Commission. Dave also worked in the private sector during his career and continued as a senior environmental engineer in that capacity full-time until 2024. He is now semi-retired and staying about as busy as he wants to be (not very). Dave was widowed in December 2024. Dave likes travelling, visiting friends, long walks, and seeing his grandkids. Dave lives in the Austin area and seeks conversion from a workaholic to a retire-aholic as he begins a new chapter in his life."

2000s

Marcus Gary (Ph.D. '09) shares, "I'm excited to be at JSG full time now as a research associate professor at the BEG. Still teaching karst hydro and hydro field camp and working with students more than ever."

James McGuire (M.S. '03) shares, "James McGuire joined the Holland & Knight LLP law firm as a partner in its Dallas office. James' practice includes a variety of environmental regulatory and compliance issues at the local, state and federal levels. His last roles were as a senior attorney and executive at the U.S. Environmental Protection Agency (EPA) - including Acting Deputy General Counsel at EPA, the highest career attorney position in the agency - and as an executive at Dallas City Hall."

Dietrich Sanders (B.S. '05) writes, "Truly proud to be one of the first to graduate under the Jackson School of Geosciences name in 2005, and it was refreshing and exciting to visit the school after all these years for the JSG 20th Anniversary. Seeing former professors, meeting new professors, meeting new staff, learning about current explorations, and the progress JSG and the University made towards the future makes me truly proud to call myself a Longhorn Alumnus. - HOOK'EM!"

Hilary Strong Petrizzo (M.S. '09) says, "Hilary Strong Petrizzo joined Projeo Corporation in 2024 to expand her work on carbon management from local to national. Projeo delivers comprehensive subsurface technical expertise, operational execution, and integrated project management services for low-carbon energy projects, including CO_2 storage, geothermal, critical minerals, and hydrogen storage, as well as more traditional energy projects. Hilary is also heavily involved in her community and is the 2025-2026 Executive Vice President of the La Canada Flintridge Educational Foundation - supporting the public school district attended by her two children."

2010s

Margaret "Maggie" Behnke (B.A. '12) writes, "I am now working at Cambrian Environmental in Austin and really enjoying it!"

Lainey Benson (B.A. '17) writes, "I've been living in NYC for the past 7 years - currently working in Tech (ride share) as a Business Development + Partnerships Manager. Not quite geoscience related but I somehow arrived here via a career route in sustainable transportation and environmental advocacy! I'd love to make a trip back to Austin soon - it's been over 6 years since I've revisited."

Laura Brenskelle (M.S. '15) shares, I've been working as a contractor for the NOAA U.S. Integrated Ocean Observing System for over a year now, assisting with their data management and marine life observing programs. I'm living back home in the mountains of western North Carolina. Experiencing Hurricane Helene and all of its changes to the landscape here firsthand was wild, but our home was luckily undamaged. I'm also expecting my first child, a boy, in late July 2025!"

Benroy Chan (B.S. '19) writes, "Class of 2019 EVS alumnus here! Last October, I started as a Sr. Sustainability Specialist with United Airlines - where I manage the consolidation of an annual greenhouse gas inventory in preparation of emerging regulatory requirements. I also support the airline's narrative on the use of Sustainable Aviation Fuel (SAF) and the scaling of decarbonization levers such as alternate propulsion, carbon dioxide removal (CDR), and more. Last December, I also had the opportunity to fly (on United of course!) to catch up with a former professor, Dr. Wonsuck Kim, and some of my closest friends from JSG at AGU24 held in Washington D.C. I'm wishing everyone back at the Forty Acres well. When the next Chicago winter rolls through, please keep up the heat on my behalf. Cheers, Benroy"

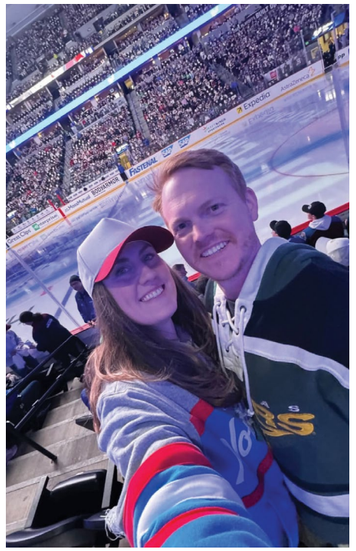
Roger Craycroft (B.S. '17) says, "Roger obtained his TX PG license in November 2024 and has been working as an Environmental Geologist with GSI Environmental in Austin since 2019. Recently, he presented at the 2025 Battelle

Bioremediation Symposium in Boston, MA about a closed-loop in-situ PFAS treatment technology using soil flushing and carbon filtration, funded through the Navy Environmental Sustainability Development to Integration (NESDI) program." He married his college sweetheart, Ashika, in April 2024 and enjoys spending time with her and his dog, Pepper, in their backyard. He also enjoys playing disc golf and the bass guitar."

Mackenzie Day (Ph.D. '17) writes, "Mackenzie Day received tenure at UCLA and welcomed a child into her family. She recently visited Austin and introduced baby Gwen to geology field adventures with a hike up Enchanted Rock!"

Hector Garza (B.S. '16, Ph.D. '25) says, "Hector recently earned his Ph.D. in 2025 and has begun a new role as Geochemist and Development Laboratory Manager at ElementUSA in Cedar Park, TX. In this position, he focuses on the characterization and extraction of critical minerals domestically and internationally."

Susannah Morey (B.S. '16) says, "Susannah Morey has accepted an Assistant Professor position in the Earth and Environmental Sciences Department at Vanderbilt University! After completing her Ph.D. at the University of Washington studying megafloods in the eastern Himalaya and serving as a postdoc at the University of Colorado Boulder, she's excited to continue her research on how extreme events like outburst floods and landslides shape Earth's landscapes across different timescales. She looks forward to building a vibrant research group and mentoring the next generation of geoscientists while exploring fundamental questions about how catastrophic events influence long-term landscape evolution."



Frank Morgan (B.S. '11) shares, "My wife Annie and I are loving our new life up in Colorado spending most of our time outdoors when we can. I currently work for TRP Energy with operations in the Delaware Basin. frankmo0053@gmail.com, (512) 740-0992."

Nataleigh Perez (M.S. '13) shares, "Nataleigh graduated with her Ph.D. in Geography from Texas A&M University in August 2025. Her research focused on high-elevation peatland ecosystems in the Peruvian Andes. She has recently started a postdoc at TAMU in the Soil and Crop Sciences Department."

Laura Pommer (M.S. '13) says, "Laura moved from Houston to San Antonio a few years ago to be closer to her business. About a year ago she transitioned from her previous role and is now helping a San Antonio based real estate Private Equity Group stand up a new energy vertical. She is thoroughly enjoying San Antonio, and her new role, and especially enjoys being closer to Austin and the JSG gang! She has been recruiting recent grads to help her out at GrayStreet Energy, and is thrilled that so far, they are far exceeding her standards (of course!). She will be joining the JSG Advisory Council in the fall and is excited to formally promote and give back to the department. All of her literal (Hi Max, Rania, Nabiel and Dee!) JSG family members are doing fabulously well, and she is hoping the next generation of Pommer/Eldam niece and nephews will enjoy geology as much as she and her sibling/in-laws have. Hook 'em!"

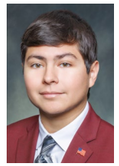
2020s

Grace Beaudoin (Ph.D. '22) says, "In June 2025, Grace began a new position. She is now a Program Manager in the Office of Postdoctoral Affairs for Washington University in St. Louis."

Elijah Gray (B.S. '24) writes, "I'm currently a geologist working in the DJ Basin in Colorado!"

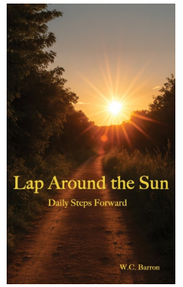
Myriam Loving (M.S. '23) shares, "After graduating in 2023, I started a position as an aquatic scientist for the Texas Commission on Environmental Quality."

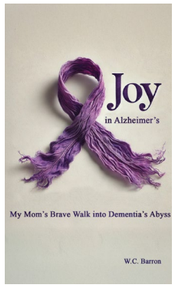
Brandon Shuck (Ph.D. '21) writes, After finishing his PhD in 2021 from the Jackson School, Brandon went on to do a three-year postdoc at Lamont-Doherty Earth Observatory of Columbia University in NYC. There, he continued to develop his research expertise on plate tectonic processes and geohazards using marine geophysical techniques. Recently, in Fall 2024, Brandon started as an Assistant Professor in the Department of Geology & Geophysics at Louisiana State University in Baton Rouge, LA. Brandon is excited to launch his academic career and grow his research group, and still actively collaborates and interacts with many geoscientists at UT Austin in the JSG community."



Marlowe Enrique Zamora (B.S. '20) shares, "I started a new job as an attorney representing clients with matters related to oil, gas, mineral, solar, and wind leases. I also generally work on matters related to property and contracts. I am happy combining what I learned at the Jackson School and at law school!"

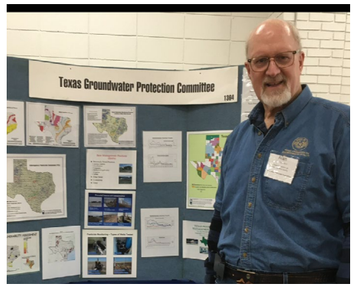
Friends





William Barron says, "I'm pleased to announce the recent release of two books: Joy in Alzheimer's: My Mom's Brave Walk into Dementia's Abyss and Lap Around the Sun: Daily Steps Forward. Both are available at Amazon and Barnes & Noble as ebooks and paperback. Life is a journey.... now that I'm retired I can give back in different ways...."

Richard Buffler says, "Christine and I love living in Santa Fe. We still enjoy traveling and enjoying the geology of this part of the world. This included a recent trip to Moab, Utah to visit Canyonlands and Arches, an amazing display of geology. Come see us."



Alan Cherepon writes, "From 1991 to 1993, I worked under Alan Dutton on the Supercollider contract. Taught science for four years before joining TNRCC (now TCEQ) in 1998, where I've worked through 2025 to protect groundwater from pesticides. I served as President of the Austin Geological Society and the Austin Gem & Mineral Society, and co-authored 3 field trip guidebooks for the AGS."

Chris Hendrix shares, "I'm a Staff Geologist at Crescent Energy, working South Texas."

William I (Bill) Woods writes, I am a retired Executive Assistant in the Department of Geological Sciences (now the Department of Earth and Planetary Sciences). I have been traveling, working as Treasurer of Bryker Woods Neighborhood Association, and volunteering at the Heart Hospital of Austin. After a brief medical concern, I'm glad to report that I'm in good health and still going to the gym 3× a week. Francisco and I celebrated his mom's 90th birthday this year in Houston, and it was a lot of fun. Friends at JSG may contact me at billw@utexas.edu. My very best to all who still remember our 21 years working together.

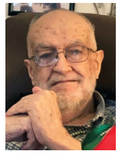
Alumni

Andrew Bagot (B.S. '78) 67, passed away February 16th, 2025 surrounded by loved ones. Andy grew up in Amarillo, Texas and graduated from Tascosa High School in 1975. Andy was very athletic in school. He played basketball and golf and would always be chosen to answer the coach's questions because they were sure Andy knew the correct answer. He and his teammates always got out of running laps after practice thanks to Andy! Andy went to State in golf his Senior year on his first and only year to play golf. While keeping up with his studies and sports, he was also the sports writer for the school newspaper. Andy went to Amarillo College his freshman year, then later transferred to The University of Texas, where he was at the top of his graduating class "Hook 'Em!". Andy started his career as a geologist in Houston immediately after graduation and poured himself into his career. He often worked long hours and commuted from Tyler to Dallas, and back again to be with his family. He became a very successful exploration geologist for several oil companies, and is very well respected and well liked in his field. His work has had a meaningful positive impact on their operational successes. Andy's greatest blessing of all was his family-his wife, his children and grandchildren. When his sons were young, he sometimes coached their sports. Recently, he was excited to get back to that tradition, as he coached his granddaughter's soccer team, "The Barbie Dolls," pink hat and all! Andy was preceded in death by his parents Edward H. Bagot and Mary Elizabeth Collins Bagot and siblings Edward Lee Bagot and Joe Thomas Bagot. Andy is survived by his wife Laura Lynne Bagot, his sister Mary Elizabeth "Libby" Bagot Yock and her husband Brad. His sons Blake and wife Holly, Nick Bagot. Taylor Darr, Madison Burch and her husband Ross, Demi Darr, Daley Kurtz and her husband David. And numerous grandchildren.

Bruce Becker (M.A. '77) began his incredible journey on July 6, 1953, in Wichita, Kansas, as the beloved son of Karl and Virginia Becker. Growing up in Wichita, Bruce was known for his adventurous spirit and deep curiosity about the natural world. After graduating from Chaplain Kapaun Memorial High School in 1971, he followed his passion for geology at the University of Kansas, where he earned his BS in 1975. He then furthered his studies with a master's degree from the University of Texas. Bruce started his career at Sabine Royalty before joining his father in the family business, Becker Gas and Oil. In 1981, he combined his love for geology and the outdoors by founding Geo Tour Whitewater Rafting Trips, a venture that he nurtured with integrity and dedication for the rest of his life. In 2002 he relocated his business to Morrison, Colorado, where he quickly became an active member of the community. Bruce wasn't just a geologist or a businessman he was an explorer at heart, a mentor, and a friend to all. His enthusiasm for life was infectious, and he had a special gift for making everyone feel welcome and appreciated. Whether sharing his knowledge of rocks or navigating the rapids of the river, Bruce left an indelible mark on those fortunate enough to know him. He was also an active member of the Colorado River Outfitters Association, where he served as chair several times, and was a proud member of the Rocky Mountain Association of Geologists. Predeceased by his parents, Karl and Virginia Becker, Bruce is survived by his brothers, Karl Becker (Gail) and Paul Becker (Sharon); his sister, Ruthie Gillespie (Jim); and a large and loving family of nieces, nephews, and great-nieces and nephews, including, Karl Becker III (Kitty), Pattie Lee Becker (Mathias Leppitsch), Chris Becker (Cynthia), Debbie Grylicki (Matt), Jamie Becker (Michelle), Ann Linck (Chris), Jane Pryor (Jon), and Caroline Harmon (Lucas), along with 16 great-nieces and nephews. Bruce was also known for his lifelong love of German Shepherds. His faithful companions over the years included Luthien, Agate, Pearl, and Lapis.

Russell Bingley (B.A. 62) of Cody, Wyoming, peacefully went to be with the Lord on Saturday, August 2, 2025 at West Park Hospital in Cody with his devoted wife of 60 years, Mary, by his side. Chris was born on June 24, 1934 in Los Fresnos, Texas to Hattie Vay Koebel Bingley and Russell Bingley, Sr. Along with his two older sisters, he spent his childhood in various towns across south Texas working on the family farms and cotton gin. Eventually his family settled in San Benito, 30 miles west of the Gulf of Mexico, where he developed a love for the ocean, seafaring, and light houses. Chris graduated from San Benito Highschool in 1952, and then attended the University of Texas at Austin. While there, he participated in the university's ROTC program. After 3 years of school, he put his education on hold to enlist in the United States Navy. After serving for 4 years, he returned to the University of Texas to complete his Bachelor of Science degree in Geology. Upon graduating, he worked for the State of California while pursuing his master's degree in geology at California State University, San Jose. He stopped short of completing his program when he was offered a position as a geologist in the department of Geology and Soils for the City of Los Angeles. Shortly after moving to LA, he became a registered geologist and later earned his certification in engineering geology. After 21 years in Los Angeles, Chris and his wife, Mary, accepted job positions in northern California. They lived in Chico for 11 years before retiring and moving back to southern California to be closer to their children and granddaughters. In 2006, when their daughter and son-in-law moved to Cody, Wyoming, Chris and Mary bought a house and joined them a few months later. Chris met Mary Hatfield in 1962 in San Jose while they were washing dishes together following a church social, and they married on January 30, 1965. They first established their home in northern California where they welcomed their daughter, Carolyn, in 1968, and then moved to southern California in 1969 where their son, David, was born. Chris was a loving and thoughtful husband. He always remembered anniversaries and was intentional in planning date nights and regular weekend getaways with Mary. He was also a present, nurturing, and caring father and grandfather to his children and grandchildren. He made sure that he carved out time to spend with each of them individually - going to dinner, a movie, play, museum, miniature golf, etc. When his children were young, he loved to plan fun and meaningful family vacations, which they frequently took in their 1975 Dodge camper van. He is also fondly remembered for creating a sense of safety and peace by reading stories and singing cowboy, American folk, and seafaring songs to his children and grandchildren at night before bed. Chris was a man of many hobbies and interests. Chris held a private pilot's license and was also a Ham radio operator. For many years Chris enjoyed cruising the Pacific Ocean and various lakes in California with his family in the 18-foot wooden cabin boat he had built with his uncle and father in 1950. He and his son-in-law, Brian, had just completed the process of restoring that boat when Chris passed away. Chris was a people person who was known for his thoughtfulness, friendliness, generosity, and hospitality. He was an avid reader and had a particular interest in history. Because of his Texas roots, he carried a strong affection for cowboys and the American west. Chris was a man of strong faith and conviction. Above everything else, he cherished his Savior. In his final days, he was surrounded by his family and friends. Chris was deeply loved by his family and friends and will be dearly missed. Chris is survived by his beloved wife, Mary, son, David Bingley, daughter, Carolyn Bingley Andrews (Brian), granddaughters Grace Andrews Epley (Jacob), Hannah Andrews Girdeen (Matthew), and Isabella Andrews, his great granddaughters Israel and Sonnet Epley, and many nieces and nephews. Chris was preceded in death by his parents, Russell and Hattie Bingley, and his sisters, Charlotte Whalen and Dorothy McBroom.

Philip Braithwaite (M.A. '58) 90, of Dallas, Texas passed away on, March 4, 2025.



Robert Brandt (B.S. '57) 90, geologist for Getty Oil and Texaco as well as an instructor for geology at University of Houston and HCC, passed away on January 4, 2025. He was born in New Orleans, Louisiana on November 8,1934, to Robert and Louie Frost Brandt, descended from the Old Three Hundred. Robert was a graduate of San Jacinto High School in 1952. He later attended the University of Texas where he received his bachelor's degree in geology. He continued his education by receiving his master's degree from the University of Houston. He is survived by his sister Susan B. Patton; nieces Julia Ann Roell and Lynda Beth Book and husband Kenneth; nephew Donald L. Patton, and several great nieces and nephews and great-greats. He also leaves behind his best friend of many years Jim Tholen.

David R. Butler (B.S. '55) 91, preceded in death by his beloved wife Helen R. Butler, passed away on July 29th. Born in Seguin, Texas, he was the son of Capt. Ray B. Butler of the Texas Highway Patrol and Era Pearson. After growing up in Austin and San Angelo, David attended the University of Texas at Austin, becoming a member of Kappa Alpha fraternity, and graduating with a geology degree in 1955. He also earned a master's degree in geology from the University of Oklahoma. He met his future wife, Helen, at UT and they were married on December 20, 1953. David had a rewarding career with Standard Oil Company and Chevron. He started out as a geologist working in different parts of Texas, California, and New Mexico, managing oil, coal, and geothermal ventures. His various jobs carried him all over the world before retiring with Chevron back in Texas in 1990. He had a wonderful, richly fulfilling marriage of nearly 58 years with Helen, traveling to 47 countries before Helen's passing in 2011. David is survived by his two loving children, Brian who lives in California with his wife Beverly, and Sarah who lives in Fairview, Texas with her husband Curt Richards. Brian and Sarah have two children - Heather Butler Dawes and Jason Buter, and Stephen and Scott Richards, respectively. David also had 5 great grandchildren.

Mary L. Dawson (B.S. '76) passed away suddenly after a brief illness on October 5, 2024. She was seventy-two. She was predeceased by her parents, L. Decker and Louise Dawson, and is greatly loved and missed by her surviving family and friends. After earning bachelor's and master's degrees in geology from UT Austin and Arlington, she spent most of her adult life in Denver, working for ARCO and Bass Energy exploration, and attaining doctoral candidacy in Organic Geochemistry at Colorado School of Mines. There she further developed her interest in singing, earning bachelor's and master's degrees in Vocal Performance from Metropolitan State College of Denver and the Lamont School of Music at Denver University, as well as studying three summers at the Aspen Music Festival and School, and performing with the Colorado Symphony and Opera Colorado Choruses. She would say that she was never happier than when practicing, rehearsing, or performing. She moved back to Midland in 2017, becoming active in the community, singing in the First Presbyterian Church Choir and the Midland Odessa/West Texas Symphony Chorale, and serving on the boards of the West Texas Symphony and Midland Memorial Hospital, as well as participating in various women's groups. She loved travel, music, art, fine dining, and fashion, and took great joy in remodeling and decorating her home and entertaining in it. She was unfailingly generous to others.

Robert Donnell (B.S. '56) passed away October 11th, 2024, after a brief illness. Robert was born June 11th, 1933, in Wichita Falls, Texas to Ralph and Anita Donnell. One of six children, he attended Midwestern State University where he met his lifetime sweetheart Beverly Webb. Later, he attended the University of Texas, obtaining a bachelor's degree in geology in 1956 and bachelor's degrees in math, government and education in 1961. After receiving his first degree, he joined the Navy in October 1956 for active duty and toured the South Pacific. After marrying in 1958 he and Beverly were stationed in Pearl Harbor and enjoyed their time together in the island paradise. Robert entered the Naval Reserves and moved to Austin, Texas in 1959. He retired from the Navy in 1987 with the rank of captain. They eventually settled in San Diego in 1961 where they raised two sons. Robert worked as a teacher, district counselor and placement and appeals counselor for the San Diego Unified School District. In 1974, Robert received a master's in counseling from San Diego State University. He retired from the school district in 1996. He and Beverly attended First Presbyterian Church of El Cajon for many years and lent their talents to the church choir. He also was part of the church's prison ministry and volunteered with the Navy-Marine Corps Relief Society and Reality Changers. When Beverly was diagnosed with Alzheimer s and was placed in memory care, he visited her daily or as often as he could. In March 2024, they celebrated their 66th wedding anniversary. He enjoyed life, enjoyed his family, and was our sage. Always laughing he was the master of a good joke. As he always said, Life is a Cabaret. He is survived by his wife Beverly; two sons Mark and Scott; daughter-in-law Debbie and two grandchildren, Jessica and Michael.

Joe Durham (B.A. '57) a man of Christ, passed away peacefully Wednesday March 5th, 2025, at the age of 93. He resided at Westmore Senior Living in Fort Worth, Texas. Joe was born on August 13th, 1931, in Deleon, Texas. Parents are Clara Belle Funderburgh and Artie Murry. Joe graduated from Deleon High School in 1948. He went to college in El Paso, Texas after graduating. He enlisted in the U.S. Army and served for 3 years. After the Army, Joe attended SMU in Dallas, Texas. He later attended the University of Texas where he received a BS Degree in Geology. He was in the National Guard while attending UT. He also received a Professional Engineering Degree. In 1954, Joe married Sarah Willis from Comanche, Texas. They celebrated 70 years together this past November 25th. The Durhams moved to Richardson, Texas in 1957. Joe worked for Sound Engineering and later founded General Sound Co. in 1973. Joe was active in Richardson Baptist church where he and Sarah have been members for 66 years. In Richardson, Joe was involved with the YMCA Football, where he enjoyed coaching young players. He served as President of many organizations: Richardson Jaycees, City Planning Commission, Richardson City Council, Texas Fire Alarm Association, and the NFPA. Joe was a very loving and devoted husband and dad as well as a great friend to many. He loved the time he spent playing golf, especially with the men at Heritage Ranch in Fairview, Texas. Survivors include Wife, Sarah Willis Durham, Son, David Durham and wife Liz, all of Fort Worth, Texas. Son-in-law, Bruce McDonald of Arlington, Texas. Niece, Penny J. James of San Augustine, Florida. Joe is preceded in death by his parents, Artie Murry and Clara Belle Funderburgh; daughter, DeLisa McDonald; and sister, Norma Adair.

Dorman Farmer Sr. (B.S. '50) devoted father, friend and respected local geologist, died Oct. 8, 2024, in Abilene. He was 98. Dorman Farmer was born April 27, 1926, in Fisher County and grew up in Abilene where he would spend his life and raise his family. The first-born son of Eugene Levi Farmer and Ida Mae Shelton Farmer, he graduated from Abilene High School in 1943 and joined the U.S Navy, serving in World War II and later in the Korean Conflict. Stationed at Louisiana Tech, he completed the Navy V-12A program. Later graduated from Midshipman's school at Columbia University in New York, serving on the U.S.S. Teal (AVP5). In 1946, he was aboard the command ship U.S.S. Cumberland Sound (AV-17) for Operation Crossroads at Bikini Atoll, for the testing of the atomic bomb. After the war, he enrolled at the University of Texas graduating in 1950 with a B.S. in Geology, becoming the first member of his family to earn a degree and becoming a lifelong Texas Longhorn fan. After returning to Abilene, Dorman became an independent geologist. More importantly, he soon met Sarah Craig while on an elevator. The couple married in 1955 and had three children, Neal, Dorsi, and D'Anne. Sarah was diagnosed with breast cancer and passed away at the age 32, just eight years later, leaving Dorman to raise three children ages 5, 4, and 3 years old. Life as single father in the early 60's was a tough road, but he remained dedicated and focused on raising his children, whom he adored. Dr. Jake and Jackie Barron, his best friends, became a second family to the Farmer brood. A decade later, it was Jackie who set him up on a date with Marian Penrod Spence. They dated for six months before they married June 27, 1973, combining the Farmer and Spence families. Together, Dorman and Marian travelled the world with good friends known as the Board. Dorman was widowed a second time when Marian passed in 2020, just a few months before their 47th wedding anniversary. Active professionally Dorman owned and operated Fargo Exploration Co. from 1957 until his retirement in 2018. As an AIPG Certified Professional Geologist, he was a charter member of the local AIPG chapter and a member the Abilene Geological Society. He was also a member of the West Central Texas Oil & Gas Association, a deacon at First Baptist Church in Abilene, on the Hendrick Medical Center Board of Trustees and a Mason for over 75 years. Dorman's children learned their father's lessons to live by: If you can't say anything nice, don t say anything at all; nothing good happens after midnight; trust in God and do your best. He loved his family, the Lord, his friends, golfing, hunting and The Texas Longhorns. Dorman was preceded in death by his parents, Gene & Ida Mae Farmer, and four siblings: Irma Gene Henson, Guy Farmer, Virginia Wise and Gloria May McCorkle. He was also preceded in death by his first wife Sarah Craig Farmer, and by his wife of 46 years, Marian Penrod Farmer. He is survived by five children: Randy Spence (Vicki), Penny Spence Pittman (Cory), Neal Farmer, Dorsi Farmer Faulkner (Von), and D'Anne Farmer; and by eight grandchildren and seven great-grandchildren.

Leonard Fowler (B.S. '55) was born on November 7, 1927 in Liberty Hill, TX to Dr. Wirt Fowler and Fay Fowler. He passed into Glory on March 8, 2025 in McKinney, TX. He was 97. Leonard grew up in Liberty Hill, Texas with 9 brothers and sisters and attended Eden High School. After graduation from High School, Leonard enlisted in the US Marine Corps where he served honorably from 1945-1947. After an honorable discharge from the Marine Corps, Leonard used his GI Bill to attend the University of Texas where he obtained a degree in Geology. He went to work for Shamrock Oil & Gas and lived in Austin, TX, Salt Lake City, UT, and Amarillo, TX. In 1971 he formed Lear Petroleum Company and moved to Richardson, TX. Leonard retired from the oil and gas business in 1987, but didn't retire from working. He formed LSF Services where he designed and built residential drain systems until he finally retired in 2017. Leonard was a huge fan of Texas Longhorn football. He also loved to reminisce about his time in the service. Animals always played a big part in his life as he loved hunting, his dogs, and bird watching. Leonard was preceded in death by his parents, Dr. Wirt D. Fowler and Fay S. Fowler, his wife of 53 years Colleen O. Fowler, and his son Leonard K. Fowler. He is survived by his son Brian D. Fowler, his wife Shelli B. Fowler and their children Trinity and Hunter; his daughter in law Connie R. Fowler; his granddaughter Hannah M. Smith, her husband Drew Smith, their children Sawyer and Shiloh; and his grandson Samuel C. Fowler.

Charles Goebel (B.S. '80) of Fort Worth, Texas, passed away at his home on July 14, 2025, at the age of 68. Charles was born on December 28, 1956, at St. David s Hospital in Austin, the eldest son of the late James and Lois Goebel. He was baptized at St. Martin s Lutheran Church in Austin and lived in both Kansas and Houston with his family. He returned to Austin to receive his bachelor's degree from the University of Texas in 1980. Though he initially majored in Radio, Television & Film, he changed his major to Geological Sciences after falling in love with an elective geology course. Charles began his career as a geologist in the Permian Basin in Midland, Texas. After nearly two years working in arid Midland, Charles found an opportunity at ARCO International Oil & Gas Co. and moved to Los Angeles in 1981. The move proved fateful when Charles met his future wife, Sandra Felsenstein, at Shakey's Pizza Parlor in West Hollywood. Charles and Sandra were married in 1983 and moved to Dubai, United Arab Emirates after he was transferred there for work. The couple had two children, James Sebastian and Amanda Christine, in Dubai. After 5 years in the Middle East, the family returned to Texas and settled in Plano (which he called Draino) in 1989, where their second daughter Clara Elena was born in 1994. A proud Texan, Charles was a highly intelligent man and avid reader who loved good music, good food, and good wine. In his early adulthood, he loved playing tennis, biking, scuba diving in Bonaire, and teaching his kids how to fish. A scientist at heart, he also had an appreciation for art and history. Traveling was in his blood, and he found excitement and fulfillment in his work as an international petroleum geologist. His job took him all over the world- to Greenland, Oman, Morocco, Turkey, Syria, Qatar, and Ecuador, among others. Outside of travelling for business, Charles explored Europe, South America, and Asia, both solo and with his family. A naturally curious person, Charles was always open to exploring new foods, languages, and cultures. He was a thoroughly decent and honorable man who always tried to do the right thing for the right reasons, never seeking recognition or to impress others. He was a hardworking man who tried to do right by his family and his friends, and never hesitated to help others if he could. A natural teacher, he loved sharing his knowledge, whether about geology, science, or history (especially Texas history). He was a thoughtful and considerate man who cared deeply about how his words and actions affected others. He enjoyed being in nature, the mountains of New Mexico, and heading out on the open road of the entire country in search of the best hole-in-the-wall restaurants with his youngest daughter, Clara. As he grew older, Charles continued to enjoy the thrill of riding his Porsche on the open road, but also appreciated the quieter moments of solving crossword puzzles or watching UT sports and old westerns like The Lone Ranger. He cherished his daughter Clara's singing voice and often listened to the recorded songs from the choir. Most recently he had come out of semi-retirement and was invigorated by working on oil deals for his company, Santa Rita Energy, once again. Charles was preceded in death by his parents, Lois Obermiller Goebel (2007) and James William Goebel (2009), and his brother Paul Joseph Goebel (2015). He is survived by his daughters Amanda and Clara, his son Sebastian, his ex-wife and best friend Sandra Felsenstein, and his siblings Helen and Richard Goebel, along with three nephews, Jake, Gus, and Wyatt Goebel.

Charles G. "Chip" Groat (Ph.D. '70) 84, passed away on March 14, 2025, in Baton Rouge, Louisiana, due to complications from Parkinson's disease and heart failure. Born on March 25, 1940, in Westfield, New York, Chip lived a life dedicated to his family, education, and the advancement of geological sciences.

A devoted husband, father, and mentor, Chip is survived by his beloved wife of 61 years, Barbara F. "Bobbie" Groat, his son Douglas A. Groat, and his daughter Lisa A. Groat. He is also mourned by his brothers, Robert H. Groat and Richard W. Groat. He was preceded in death by his mother, Beatrice Foote Groat, and his father Howard Henry Groat.

Chip was an avid runner, often logging several miles daily, regardless of the weather. His love for running took him through a snowstorm in Russia and a torrential downpour in Vietnam. He also had a passion for sailing and would race with his crew on a J/24 sailboat on Lake Pontchartrain and the Gulf of Mexico during the 1980s. An accomplished world traveler, his journeys took him from South America to the Middle East, throughout Europe, Asia, and Africa, and to the remote wilderness of Alaska.

His distinguished career in geology began with a B.A. from the University of Rochester in 1962, followed by an M.S. from the University of Massachusetts Amherst in 1967. It was here during his graduate studies that he met and married his wife Bobbie in September 1963. He earned his Ph.D. from the University of Texas at Austin in 1970.

Over his career, Chip held several positions in academia, government, and research institutions. He served as a research geologist, followed by associate and acting director of the Bureau of Economic Geology at the University of Texas at Austin (1968–1976) and associate professor in the Department of Geological Sciences (1974–1976). He then served as associate professor and chairman of the Department of Geological Sciences at the University of Texas at El Paso (1976-1978). From 1978 to 1990, he was a professor at Louisiana State University's Department of Geology and Geophysics. He also played a key role in state government, serving as Assistant to the Secretary at the Louisiana Department of Natural Resources (1983–1988) and as Director and State Geologist for the Louisiana Geological Survey (1978-1990).

From 1990 to 1992, Chip served as the Executive Director of the American Geological Institute, followed by his tenure as Executive Director of the Center for Coastal, Energy, and Environmental Resources at Louisiana State University (1992–1995). He later joined the University of Texas at El Paso, where he was the Director of the Center for Environmental Resource Management and Director of the Environmental Science and Engineering Ph.D. Program, Professor of Geological Sciences, and Associate Vice President for Research and Sponsored Projects (1995–1998).

In 1998, Chip was appointed the 13th Director of the U.S. Geological Survey (USGS) by President Bill Clinton and was retained in this position by President George W. Bush. He led the agency until 2005, overseeing critical research on energy resources, water policy, and environmental sustainability.

Chip was awarded the AGI (American Geosciences Institute) Campbell Medal for Superlative Service to the Geosciences in 1998. This Medal is presented each year to a nationally recognized, living geoscientist with a distinguished record of significant achievements in science, education, and administration, in support of the profession of geology and its role in society. It is AGI's most distinguished award.

Following his tenure at USGS, Chip returned to the University of Texas at Austin to direct the Energy and Earth Resources Graduate Program and the Center for International Energy and Environmental Policy. In 2008, he was named interim dean of the Jackson School of Geosciences.

In 2011, Chip became the founding president and CEO of the Water Institute of the Gulf, where he championed scientific and engineering research to address coastal and environmental challenges. From 2019 to his retirement in 2021, he served as acting Director of the Louisiana Geological Survey.

Chip's leadership in the field of geology was widely recognized, and he was an active member of the Geological Society of America, the American Association for the Advancement of Science, the American Geophysical Union, and the American Association of Petroleum Geologists. He also served on numerous scientific boards and committees and contributed extensively to research publications on earth sciences and environmental policy.

A devoted family man, he was deeply involved with his children, offering them guidance and unwavering support throughout their lives. He served as a dedicated Scoutmaster, president of the church council, and as church treasurer. Service to others was a central part of his life. He took great pride in supporting his family's education and aspirations, always encouraging them to follow their dreams.

Chip's legacy will be remembered through his contributions to science, his mentorship of future geologists, his kindness, generosity, and the love he had for his family.

Milo E. McMurtray (B.S. '57) 90, of Laguna Woods, CA and formerly of Chambersburg, PA passed away from acute leukemia on Friday, October 11, 2024. The son of the late Roy S. and Lucille Harris McMurtray born on May 15, 1934, his mother's 30th birthday. Born in San Antonio, TX, Milo graduated from Thomas Jefferson High School and received his B.S. in Geology from the University of Texas in 1956. He was honorably discharged from the United States Air Force on October 5, 1960. Milo worked for many oil companies and served as a geologist and land man in the trust department of Liberty National Bank & Trust Co., Oklahoma City, OK (1968). While employed by Texas Eastern Pipeline, he moved to PA to serve as a senior Right of Way Agent to oversee the replacement of their pipeline across Franklin County. During this time, he met Sue Kocek, Managing Director of Totem Pole Playhouse, where the pipeline traversed the playhouse parking lot. Married on October 7, 1995 at Cathedral of the Pines, the couple honeymooned in London. Married for 18 years, Milo and Sue's love of adventure also took them all over Western Europe, Poland, UK and the Caribbean. Milo moved to Laguna Woods, CA in 2012 to be near his children. He is survived by son Michael McMurtray, daughters Kim McMurtray, Jennifer Ireland (John) and granddaughter Mila McMurtray, all of CA. He is also survived by his brother, Russell T. McMurtray, Laguna Woods, CA. In addition to his parents, he was proceeded in death by his sister, Frances McMurtray (2009), brother, Robert McMurtray (2015) and his first wife, Carolyn McMurtray (2024) and his two favorite standard poodles, Ezzie and Kizhi. Milo was a member of St. George's Episcopal Church, Laguna Hills, CA. He enjoyed swimming and Tai Chi.

Marvin Leroy Mills (B.A. '58) 89, passed away September 24, 2024 in Fort Worth, TX. Marvin was born on January 18, 1935 in Sapulpa, Oklahoma to Clara and Marlin Mills. One of five children. He graduated from Spring Creek School class of 1949 and Borger High School in 1953 both in the Texas panhandle. He kept in contact with many of his past classmates throughout the years. Always looked forward to receiving those phone calls and Christmas cards. He received a B.S. in Geology from the University of Texas. During the summers while attending college he roughnecked in the oil fields in Wyoming. He was drafted into the Army and stationed in Mainz, Germany for two years with the 367th Ordinance Detachment. Upon his return to the States, Marvin met Barbara Inglish and married in November of 1960. They had one daughter, Lori and one son Roger. Marvin was employed with Mid-America Pipeline Company (MAPCO) until his retirement. Upon retirement he and Barbara moved to Fort Worth, TX. His grandsons loved to get him started playing board games and sharing stories when all together at Christmas time. He is survived by Kay Matzer (sister), Lori Mayes (daughter) and husband Robert Mayes, Roger Mills (son), four grandsons and families: Keith Mayes (and Maddy - spouse, great-grandsons Aiden and Xander), Kristopher Marvin Mayes (and Elizabeth - spouse, great-granddaughters Kalisha and Lillian), Nickolas Mayes, Mitchell Mayes (and Kasi - spouse) and several nieces and nephews.

John A. Minks (Maj. USAF, Ret.) (B.A. '66) navigated his last C-130 Hercules flight on October 9th, 2024 succumbing to lung cancer and Parkinson's disease. John avoided being drafted (by seven days) in 1967 by joining the Air Force after graduating from the University of Texas at Austin with a BS in Geology. He served in Vietnam from 1969 to 1972 as a navigator for C-130's flying 692 missions and sorties including Operation Blind Bat along the Ho Chi Minh Trail. He was awarded numerous metals for distinguished service. His first transfer stateside was to test and evaluate Omega, the first worldwide air navigational system for USAF. In 1977 he was assigned to Kirtland Air Force Base (KAFB), in the Air Force Operational Test and Evaluation Center (AVOTEC) for the Air Launched Cruise Missile System. His last assignment in England is where he completed 21 years of service and was part of the North Atlantic search and rescue operations. After retiring from the Air Force in 1989 he went to work for the State of New Mexico's Department of Workforce Solutions. He was born in 1943 at Maxwell Army Air Base in Montgomery, Alabama to Guy Marion Minks and Lois Myers, the first of their five children. He is preceded in death by his parents, his first wife, Doreen McCoy Minks of Troon, Scotland, and one brother, Raymond (killed in Vietnam 1971). He is survived by his second wife of 21 years, Judith Minks, as well as one daughter, Jenniffer Minks (Col. USAF, Ret.) (Chris), three step-daughters, Kim Allen (Dudley), Erica Moss and Jackie Apodaca (Jeff), as well as three sisters Marian Minks (Susan), Jeanie Elwood (Gary), and Marie Minks Johnson. In addition there are seven beloved grandchildren and five great grandchildren.

Isaac Walker Jock Norman (B.S. '48) having served his family and his community for over 99 years, finally rested at his home on January 29, 2025. Born to parents, Isaac and Winifred Rickard Norman, on October 11,1925, Jock spent his early years exploring the creeks and fields of Norman s Crossing, along with siblings, Wynette and Howard. The family soon moved down the road to the farmhouse built by his grandfather in 1906, a house that would become a symbol of perseverance, comfort, and love for Jock for the rest of his life. Following the death of his father when Jock was only 10 years old, he began working the farm and helping his mother as she rented out rooms in their home to make ends meet all while excelling in his studies at the school at Norman's Crossing. It was through these challenging childhood experiences that Jock learned the importance of determination, frugality, commitment to family and love of farming traits that would mold his character and shape his future years. Jock graduated Valedictorian of the class of 1942 from Hutto High school, where he was president of his senior class, and was a proud member and captain of the Hippo football team. Following graduation, Jock served his country as Second Lieutenant of the United States Army Air Corp, training to be a navigator and bombardier at bases in Louisiana, Utah and New Mexico. After his service to his country, Jock enrolled and excelled in the University of Texas, graduating with a degree in geology. Jock married his love, Frances Tyler, from neighboring Taylor, on April 10, 1948, and the couple moved to Houston to pursue their passions of geology and art. Together they raised five children, Wynette, Leigh, Pat, Lisa, and Howard. Jock s career as a geologist took him from Gulf Oil Corporation, to the Brown Family, and later Highland Resources. While progressing in his career and raising their family, the Normans kept strong ties to Norman's Crossing, frequently returning to the farmhouse for weekend visits. Upon retirement and upon the promise of building Frances an art studio, they returned to their roots and spent their golden years tending the fields in the place that always felt most like home. Jock could usually be found on his tractor or enjoying quiet moments on the porch, taking in the sunset with a cigar in hand. Jock will be laid to rest by his wife of 70 years, Frances, and his only son, Howard. Jock will be sadly missed and joyfully remembered by his daughters, Wynette Lessner and husband, Roy, Leigh Norman, Pat Norman, and Lisa Norman and husband, Patrick Gaylor. He is also in the hearts of five grandchildren: Katherine Shannon Hess and fiancé, Matthew Greene; Chris Shannon and wife, Leanne; Bridget Brewer and husband, Nick; Will Lessner and Adrian Lessner; and five great-grandchildren.

Fred Oliver (B.S. '51) was born in Amarillo, Texas on March 18, 1924 to Mac Donald Oliver and Bertie Prudence Oliver. He graduated from the University of Texas at Austin in 1951 with Bachelor of Science degrees in geology and physics. Fred was married to Frances Jane Schmidt on July 1, 1950 with whom he raised seven children during their marriage of 61 years, until her passing in 2011. Fred worked as a petroleum engineer and geologist, eventually becoming President & CEO of Greenbrier Operating Company in 1974, retiring in 1990. He was active in several professional organizations including SPE, Dallas Geological Society, Society of Independent Professional Earth Scientists, AAPG and IPAA. Fred is preceded in death by his wife Frances Jane Oliver, and his brother Mac Donald Oliver. Fred is survived by his children Fred Oliver, Jr. (wife Lori Oliver), Jimmy Oliver, Duane Oliver, Jane Oliver Smith (husband Steve Smith), Gary Oliver, (wife Peggy Oliver), Paul Oliver (wife Shannon Oliver), and Judy Oliver Lee (husband Frank Lee), and daughter-in-law Robin Oliver, 14 grandchildren and 4 great grandchildren.

David "Dave" Orchard (M.A. '79) passed away on Jan. 7, 2025, at the age of 72, surrounded by loved ones in Katy, Texas. David was an oilman, a fireman, a scientist, an entrepreneur, and a poet. He loved fishing, baseball, unearthing Ice Age megafauna bones, and throwing elaborate surprise birthday parties for his wife of 51 years. His eyes would light up when his kids could identify the Great Unconformity on one of the family's frequent road trips through the American West. David was born Oct. 21, 1952 in Ukiah, Calif. His father, Merle, was an accomplished boxer, attorney, prosecutor, and harmonicist. Both David and his uncle, Wayne, would regularly describe Merle as "the best man I've ever known." David's mother, Ruth, was an erudite teacher and civic organizer who delighted in showing off her grandchildren to the Ukiah French Club (and terrifying them with invitations to the San Francisco Opera). David grew up in a hillside home above the Russian River with two sisters, the late Anne Hurley and Janet Orchard, plus a rotating menagerie of donkeys, horses, ravens, raccoons, and very good dogs. He wrestled and ran track at Ukiah High School, where his record time in the 100-yard low hurdles still stands. (Races began being measured in meters the following year.) David rowed crew at Stanford University, where he received a Bachelor of Arts in Anthropology. In his free time, he would hitchhike up the El Camino Real to the College of Notre Dame in Belmont to see Marie Anne Horning, also from Ukiah. He spent four summers in the Coast Ranges fighting 105 wildfires (including one while dressed as Smokey the Bear). His biggest -- a 10,000-acre blaze near Covelo -- was also his last; he left the front lines to marry Marie on Sept. 22, 1973. One of David's lifelong fascinations, incurring lifelong teasing from his children, was geology -- its mysteries, majesty, and revelatory "time-transcendent experiences." This led him to San Diego State University and to a pair of stints doing fieldwork for the USGS around Anaktuvuk Pass in Alaska's Brooks Range. It led him to graduate school at the University of Texas at Austin, where he earned a Master of Science in Geology and where David and Marie's eldest, Emily, was born on his birthday in 1979. It also led to a long and productive career in oil and gas exploration, beginning with ERG in Houston. In 1982, BHP Petroleum transferred the family to Denver, where Phillip and Ellen were born, and eventually back to Houston for good in 1989. In 1994, David started Manzanita Alliances -- a prosperous industry services company that he ran with Marie until its sale in 2007 -- along with side projects involving, among other things, translating Chinese petroleum literature, plus some misadventures in digital publishing in London. He remained active in local geology circles, helping revive the Houston Chief Geologists and serving as editor of the Houston Geological Society's in-house journal, the HGS Bulletin. He always longed for a return to his scientific roots. Toward this end, in 2005, he started the Foundation for Quaternary Paleontology of Venezuela in support of a project excavating Pleistocene fossils from the Breal de Orocual tar pits in Venezuela's Orinoco Belt. The following year, he returned to work as a geologist with ConocoPhillips. He found a lot of oil. In Houston, the family flourished. David served as Little League coach and Boy Scouts leader. He was fond of organizing fishing

expeditions along the Gulf Coast, geology field trips, and backpacking treks. He made several trips to check in on his kids' overseas adventures in London, Switzerland and Thailand. He was a proud member of the Knights of Columbus council at St. Edith Stein Catholic Church and the Houston Poetry Society. Each Christmas, family and friends would receive an anthology of his recent poetry whether they wanted one or not. In 2007, David dispatched Phillip to Liberia to help Samuel Holmes, a promising tennis player, secure a student visa to attend college in Houston. In 2009, David took the first of his own two trips to Liberia, returning with Samuel's brother, Abraham Kamara, and fostering a profound kinship with their father, Arah. Both boys thrived in Texas and became full members of the family. David s final years were spent primarily doting on his 10 grandchildren. He became a member of St. Bartholomew the Apostle Catholic Church in Katy, Texas, and a volunteer firefighter. He loved the Astros and organizing work weekends at the family's bucolic "farm" (total output: 1.5 peaches) near New Ulm, Texas. In addition to Marie and the kids, David is survived by his sister Janet Orchard; son-in-law Justin Kilbride; daughters-in-law Constance Dykhuizen, Ashton Holmes, and Olivia Enriquez-Kamara; and extended family Maddy Hirshfield, Mary Nolan, and James Steindl.

Robert Pettigrew (B.S. '52) of Spring Branch, TX crossed over in peace September 18, 2024. Bob is survived by his loving wife of 30 years, Sheila M. Pettigrew, his children Stephanie Leff (Barry) of Memphis, TN, Venetia (Venny) Zachritz (Walter) of Ashville, NC, Ariana Pettigrew (Brian Garvey) of Austin, Nicole Beall of Spring Branch and Danielle Beall (Collin Hammond) of Cornwall, England. He was proceeded in death by his son, Christopher Pettigrew. Bob loved his grandchildren Benjamin Leff of Houston, Mitchell Leff of Atlanta, Melissa Zachritz (Caiti Pratt) of Denver, Co, and Sara Zachritz (Anthony Baldo) of Santa Fe, NM. Bob was born in Wichita Falls to Margaret and Virgil Pettigrew April 6, 1931. He obtained a MA in Geology from UT Austin. He served in the US Army Counterintelligence CI Division in Berlin, Germany where he met his late wife Helga Bober Pettigrew. Following his tour he was employed by ExxonMobil with a 35-year career as a supervising geologist. His work in the energy field sent him around the globe including Asia, Africa Ivory Coast, South America as well as North Sea exploration. While employed with ExxonMobil, Bob lived in Surrey, England from 1975 until 1985 where he enjoyed the culture, art and history of Europe. Retirement brought him back to Texas, where he continued as an Independent Consultant. Fulfilling his dream, Bob built a home surrounded by nature on high ground near the Guadalupe River. By his own hands he converted rocky hill country soil into a formal English Parterre Garden. Bob loved to spend his time connecting with nature, always improving his garden and time with his beloved pets. Bob was a talented artist. He painted in oils. His landscapes and still life paintings were fashioned after the old European masters using local themes from his native Texas. His love of art led him to be President and Treasurer of the Bulverde Area Art Club. Bob was a dedicated parishioner of St. Joseph Honey Creek Catholic Church in Bulverde.

John Pope (B.S. '86) 62, passed away peacefully at home in Sugar Land, Texas, on April 18, 2025, after a long and courageous battle with pulmonary fibrosis. A devoted husband, father, grandfather, brother, and friend, John lived a life marked by humor, loyalty, and strength. Born in Columbus, Mississippi, John was the son of Colonel Joe Daniel Pope and Frances Anne Pope. As a U.S. Air Force "brat," he spent his early years moving frequently with his family, but eventually settled in one of his favorite places Ft. Walton Beach, Florida where he graduated from Choctawhatchee High School. He went on to attend the University of Texas at Austin, where he received a B.S. in Geology and cultivated a deep appreciation for Longhorn pride. In 1988, John began his career at Travelers Insurance Company, where he worked as a senior account executive until his retirement in 2019. His work ethic, professionalism, and keen intellect earned him the respect of his colleagues and clients alike. But John's proudest role by far was that of Dad. He poured his heart into raising his children Susan Claire Pope, J.D. Pope (Becca), and Kyle Leger Pope (Megan) and was always present for them, whether it meant sports, plays, or late-night talks. He was also a loving Foddy to his granddaughter, Lilian Kial Pope, whose joy and energy brought him endless pride. He loved fishing and hunting with his family and friends time spent in nature that often turned into storytelling sessions filled with laughter. His ability to tell a great joke, usually laced with sharp wit and intelligence, was one of his trademarks. His family will always remember his wisecracks, one-liners, and his signature piece of advice: "Never try to teach a pig to sing. It's a waste of your time, and annoys the pig." John is survived by his wife of 32 years, Paula Leger Pope; his children and their spouses; his granddaughter; and his sister, Mary Spain Schwantes. He was preceded in death by his parents Joe and Anne Pope.

Clyde Seewald (B.S. '63) 82, passed away on October 27, 2024, in Longview, Texas after a short illness. Born on September 29, 1942, Clyde graduated from Boerne High School and furthered his education at the University of Texas where he was awarded both a bachelor's and a master's degree. He built a distinguished career as a petroleum geologist, contributing significantly to his field. Clyde was an avid outdoorsman who enjoyed hunting and fishing, passions that brought him both joy and peace throughout his life. He is survived by his loving wife, Paula Seewald, son, Jeff Seewald, Jeff's partner Cristina Bustamante, son Chris Seewald, son Greg Seewald and Greg's wife Tammie as well as 5 grandchildren.

Keith Tompkins (B.S. '57) of Houston Texas, joined his heavenly wife, Audrey, on February 24, 2025 at the age of 101. He can now hold her hand as he did when she took her last breath in 2023. Keith was with family in his home of 68 years. Keith was born on February 11, 1924 to his parents, Charity Ruth Shults Tompkins and George Washington Tompkins in Las Animas, Colorado. He was preceded in death by his beloved wife of 75 years, Audrey Elizabeth McDermott Tompkins. His parents, Charity Ruth and George Tompkins. His youngest daughter, Nancy Lynn Tompkins Walton, daughter-in-law Nancy Marie Tompkins, and grandson Brian Keith Tompkins. His siblings; Horace Tompkins, Jack Tompkins, Inez Fowler, and Guy Tompkins and sisters and brothers-in-law. He is survived by his children; Ray Tompkins and wife Carol, Phil Tompkins and wife Kay, Joan Johnson and husband Roy, Gregg Tompkins and wife Lynette, Russell Tompkins and grand puppy Mitzi, Timothy Tompkins and wife Nancy, Karen Michalak and husband Robert, Glen Tompkins and wife Valencia, and son-in-law Mark Walton. Also survived by many grandchildren and great grandchildren, sister-in-law Ruth Tompkins and many nieces and nephews. Keith's childhood was primarily in The Heights (Houston) where he and his brother Guy spent most of their time together exploring the outdoors. He attended Helms Elementary, Hamilton Junior High School, and Reagan High School. While at Reagan HS, he was a pole vaulter, setting multiple records. After high school, Keith served in the Navy as a private first-class aviation mechanic, while stationed in Beeville, Texas. He was discharged at the end of WWII. Keith's sister, Inez, introduced Keith to Audrey. Inez and Audrey attended Massey Business College at the same time. Audrey and Keith went on a double date with his brother Guy (Guy's date, Ruth, would be Guy's future wife). From then on, Audrey and Keith s future was destiny, married for 75 years! They had a beautiful family; 9 children, daughters and sons-in-law, 22 grandchildren and 29 great grandchildren. Keith pursued his Bachelor of Science in Geology at the University of Texas, graduating in 1953. He had a love for all things science. While at UT he was also on the track team as a pole vaulter. According to the UT Sports Association, Keith was a master pole vaulter and contributed to the 1950 Southwest Conference win. His highest vault was 13 feet with a bamboo pole. He lettered in several events throughout his time at UT. He was a Longhorn through and through. After completing college he worked as a geologist for several different oil companies including Gulf Oil, Coastal States Gas Production, Houston Natural Gas & Pipeline (which merged with InterNorth Inc. and later named Enron), United Gas Pipeline, and Mesa Petroleum. Keith loved all things outdoors, even receiving the nickname, Nature Boy. As an adult he continued to participate in sports. Golf, bowling, pole vaulting, coaching and umpiring Little League (also attending MANY grandchildren's sports games), horseshoes, diving, Senior Olympics (until age 85). He spent much of his time with Audrey doing things they both loved; sitting outside on their swing, watching Wheel of Fortune, listening to music, traveling. Keith's kindness shown in many ways. He helped others with many projects, whether a house remodel or repairing whatever needed to be repaired. He was kind, quiet, humble, patient, reserved, a thinker, a provider, a role model, a sportsman, a family man. We've lost a good man who will be greatly missed by all!

Billy F. Watkins (B.S. '50) was the only child of Gus Edward Watkins and Willie Belle Pack Watkins. He was born in Gulf, Texas on January 27, 1927 and spent the majority of his youth in Newgulf and Matagorda. He was introduced to fishing and hunting at a young age and was an avid sportsman for his entire life. He enjoyed and participated in many sports as a youth, and continued playing golf, hunting and fishing for as long as he could. Billy was a man who loved his family greatly and was their unquestioned leader. The values and integrity with which he lived were a model for his family. He led primarily by example in a gentle but firm manner. The great love of his life was his wife of 51 years, Peggy, whom he married in 1953 after meeting on a blind date. They did everything in life together until her passing in 2014. His love for his 3 sons knew no bounds, and when reached the position of Grandad, he took on this new responsibility with the same great love, affection and care. He was fully supportive in all the sports and other events his children participated in. Billy served his country in World War II as a radar operator on the Vella Gulf aircraft carrier, enlisting in the Navy at age 17 after graduating from Boling High School. He was accepted into a naval aviation program that was shuttered by the Navy when the outcome of the war was certain. After the war, Billy enrolled in college and graduated from the University of Texas at Austin in 1950, majoring in geology. He returned to Newgulf to work for Texas Gulf Sulphur Company, and worked in the field department as a geologist until his retirement as field manager in 1987. He and Peggy lived in Newgulf until building a home in Wharton in 1994. He lived there until moving to Austin for the remainder of his life. Billy's greatest joy and purpose in life was in serving his Lord and Savior Jesus Christ. He was active in many organizations in his pursuit of spreading the gospel, including the Emmaus program in the Methodist church, and in many Bible study groups. Billy is preceded in death by his son Russell James Watkins, wife Peggy Watkins and his parents. He is survived by his sons Randall Lee Watkins and wife Roxanne of Chappell Hill, Kenneth Edward Watkins and wife Denise of Austin, three grandchildren and a great grandson.

Katherine "Kathy" Weiner (B.S.'83) beloved wife, mother, and friend, passed away peacefully in New Braunfels, Texas, surrounded by family after a courageous battle with cancer. She was 64 years old.

Born in Midland, Texas, Kathy grew up in Corpus Christi and later attended the University of Texas. She built a beautiful life filled with love, adventure, and deep connections. She is survived by her devoted husband of 40 years, Steve; her son, Tom, and his wife, Sarah; and her daughter, Laura. She was also cherished by her large extended family and many dear friends.

An active and vibrant person, Kathy embraced life with enthusiasm and warmth. She loved to travel, exploring the world with curiosity and joy. She found immense happiness in her many social circles, where she formed lifelong friendships. Above all, she was an incredible mother and wife, always putting her family first and filling their lives with love and laughter.

She will be deeply missed by all who knew her, but her kindness, adventurous spirit, and unwavering love will live on in the hearts of those she touched.

Friends

Eugene L. Ames III, a gentle-hearted soul, went to be with the Lord on May 18 at age 65. Gene passed away peacefully at home surrounded by his loving wife and two sons.

Gene was a true Texan, a man of integrity, loyalty, and abiding faith. He greatly loved his family, his many friends, South Texas, the Texas Hill Country, the Guajillo Ranch, Jackson Hole, cooking, hunting, fishing, hiking, camping, the oil and gas industry,

geology, and the Texas Longhorns.

Gene was born to Ellen and Eugene Ames, Jr. in San Antonio, Texas. He attended Alamo Heights High School, The University of Texas, and Trinity University where he received a Bachelor of Science in both Business Administration and Geology. He returned to UT Austin for graduate geology studies.

Gene met his wife, Logan, at the University of Texas and they shared a wonderful life together. Gene was a devoted, strong, steady and supportive father to his sons, Corwin and Asa, who were his pride and joy. Gene was passionate about both his community in San Antonio and his profession as a petroleum geologist, selflessly giving his time and talents to both. In his beloved San Antonio, he was an elected Director of the Edwards Underground Water District from 1992–1995, committed to the mission of preserving the Edwards Aquifer. He served on the board and as President of both the San Antonio Public Library Foundation and Respite Care of San Antonio.

Gene established, owned, and operated Ames Energy Advisors and established partnerships of Bissell Operating, and Compadre Resources. Gene began his lifelong career as a Petroleum Geologist with Sandia Oil and Gas and Venus Exploration where he acted as Vice President of Exploration & Operations. He managed The Nordan Trust for several years.

Gene served from 1998 until the end of his career on the Petroleum Technology Transfer Council in numerous leadership positions. He was appointed by the U.S. DOE to the Unconventional Resources Technical Advisory Committee. He served on the board and as President of the South Texas Geological Society. Gene was a member and held numerous leadership positions in the American Association of Petroleum Geologists, Gulf Coast Association of Geological Societies, Texas Independent Producers and Royalty Owners Association, the Independent Petroleum Association of America, Texas Oil & Gas Association, and was appointed by Texas Governor George W. Bush to serve on the Interstate Oil & Gas Compact Commission.

Virgil E. Barnes II died peacefully on August 31 with his family at his side. He was a Professor of Physics at Purdue for 49 years and a leader in the golden age of subatomic particle discoveries since the 1960s that led to the modern understanding of the building blocks of the Universe. Born November 2, 1935 in Austin, Texas, Dr. Barnes was the son of Virgil Everett Barnes, an eminent geologist at the University of Texas at Austin, and Mildred Louise Barnes. A top 10 winner of the national Westinghouse Science Talent Search competition while in high school, Dr. Barnes went on to study physics at Harvard before completing his PhD in 1962 at the University of Cambridge on a Marshall Scholarship. His advisor, the luminary Otto Frisch, had coined the term "nuclear fission." Dr. Barnes's first job was at Brookhaven National Laboratory on Long Island, then the center of particle physics research in the U.S. In 1964, he was on the team that discovered the Omega Minus particle, a key experiment which confirmed the quark model in high energy physics and contributed to at least one Nobel Prize. After joining the faculty of the Purdue University Physics Department in 1969, Dr. Barnes served as Assistant Dean of the College of Science, and mentored 8 graduate students, as well as over two dozen undergraduates. He became a founding member of the groups building particle detectors both at Fermilab near Chicago and at CERN in Europe. He developed techniques (still used around the world) for precisely measuring the energy of particles, key to identifying them and allowing many further discoveries. In 1995, Dr. Barnes and the team at Fermilab discovered the top quark, completing the discovery of this class of elementary particles, begun 31 years earlier. In 2012, he was also a member of the team that discovered the Higgs Particle, which gives all other particles mass. This was the most important discovery in particle physics of the last few decades. Dr. Barnes married Barbara Green, a fellow research scientist, in 1957. They had a son before her untimely death in 1963. He later met Linda Taylor while they were both vacationing on the French Riviera and it was love at first sight. They married in 1970 and had three sons. The couple had many friends in the West Lafayette area and around the country, including a close-knit group of couples who shared a love of fine food, wine, and raucous laughter, known as the "Gourmet Group." They were members of Parlor Club, where they presented well-received papers on various topics such as "Off the Beaten Path in Japan" and "Terra Amata a Paleolithic Campsite." Dr. Barnes spoke French and German, loved classical music, and collected African and Asian art. He delighted his sons and grandchildren with toys and geometric creations, including a wand to create 20-foot-long bubbles and a dodecahedron version of the Rubik's Cube. He even built his own harpsichord. Dr. Barnes and his family traveled widely, including to Tibet, Egypt, Peru and Tanzania, as well as throughout Europe. His favorite vacation spot, though, was a beloved home on Cranberry Lake in the Adirondacks. The couple skied together for multiple weeks every year until Linda's death in 2011. Dr. Barnes continued skiing until he was 78.

Anne Lesikar's vibrant life ended abruptly on January 13, 2025, at one of her favorite places while celebrating 48 years of marriage with her husband, Bill. Anne was born June 14, 1953, in Beeville, Texas. Anne was a wonderful example of a Proverbs 31 woman – wise, strong, generous, faithful, caring towards her family and friends, actively involved in her community and deeply devoted to God. As a devout Christian and disciplined student of the Bible, Anne was committed to becoming more and more Christlike throughout her life. She exemplified this by always working in service of others, whether as a dedicated volunteer GED science teacher for Aspire and its predecessor Aberg Center for over 10 years, as a volunteer at vacation bible school, or simply as a loving presence in her family and friends' lives. Anne graduated with highest honors from the University of Texas at Austin and practiced pharmacy for over 40 years. She was a die-hard Longhorn, having attended her first University of Texas football game as a young child and her last one with several lifelong friends just a few days before her death. Anne's family will remember her as a dedicated wife, a nurturing mother, a doting "A-Diddy" to her four beautiful granddaughters and their many friends, and a loving sister and aunt. Her friends will remember her as a true friend – joyful, positive, loyal and compassionate, with a smile that would light up a room. Her GED students will remember her as a patient and encouraging science teacher who celebrated with them in their successes – Anne was always thrilled beyond description upon learning that one of her students had passed the science section of the GED exam.

Fred McDowell died on November 21st, 2024, in Albuquerque, NM. He was born in 1939 in Abington, PA. He was educated at Lafayette College and Columbia University. While at Columbia, Fred met and married Karin Bartelsen, and they began a family that eventually included three children. After a two and one-half year stay in Zurich, Switzerland, the family moved to Austin, Texas in 1969. Fred was a research scientist in the Geological Sciences Department of the University of Texas at Austin for 37 years, during which he managed a research lab. He mentored numerous graduate students and with them conducted a long-term study of volcanic rocks in northwestern Mexico that has results in several publications. He continued to compile and publish his research after retiring in 2005.

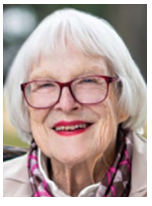
Kirk Michaux passed away peacefully at his home on the Solana Ranch, April 12, 2025. He was 84 years old. Kirk was born on January 18, 1941 in Houston, Texas to parents Frank W. Michaux of Houston and Retta Hazelip Michaux of Greenville, Mississippi. Kirk spent his early years in Houston, Texas, attending The Kinkaid School. For high school, he attended the Sewanee Military Academy before graduating from Avon Old Farms in Connecticut. He attended the University of Texas and was a member of the Sigma Alpha Epsilon, fraternity, an organization he supported for decades, including acting as the Chapter Advisor. Kirk married Julie Ann Gentry of Tulsa, Oklahoma in 1967. They moved to Austin, where they raised their two children. Kirk was active in the commercial real estate business in Austin, developing apartment complexes and several office buildings. Kirk also served as the Director of the Texas Department of Commerce, supporting economic development throughout Texas. Some of Kirk s favorite times in Austin were spent at the Knebel Little League field, where he served as the Commissioner, UT Football games, and sitting on a backyard patio with friends and family. In 1995 Kirk and Julie moved to the Solana Ranch, the ranch Kirk's parents started in 1950. Although the two intended to be there for only a few years, Kirk and Julie became immersed in Salado and the surrounding communities and have now lived there almost thirty years. The Solana Ranch is a Michaux family legacy and Kirk treated it as such. He spent countless hours ensuring that Solana Ranch enhanced the local environment and wildlife, while also generously supporting the community. In 2017, Kirk proudly accepted the Lone Star Land Steward Award from the Texas Parks and Wildlife, celebrating and honoring the years of stewardship and wildlife management at Solana Ranch. In his later years, Kirk s best and most cherished memories came from celebrating and enjoying his grandchildren.

Keith Paul, 94, of Hunt, TX, passed away on September 23, 2024, in Kerrville, TX. Keith was born in Los Angeles, CA on May 1, 1930. He grew up in Houston, TX, and graduated from Lamar High School. He earned a BBA from the University of Texas at Austin where he was a member of Kappa Sigma fraternity. At the age of 14, he started working for Texas Tire Co. and also working on and driving farm equipment until he graduated from UT in 1952. He married Betty Robertson, and then served in the U.S. Army for two years. Keith then began working as a management consultant which ultimately led him to small business ownership in his chosen field of pipeline evacuation and portable compression services for the past 60 years.

Mary Ruth Valerius died on March 19, 2025 in Houston Texas, after a short battle with cancer. She attended Lamar High School and continued her education at the University of Texas at Austin where she became an active member of Delta Delta Delta Sorority. She married Robert Valerius in 1959 and lived in several cities before settling in Corpus Christi for 44 years raising a family. Once her children began school, she earned a B.S degree in nutrition at Texas A&I in Kingsville (now Texas A&M) traveling about 40 miles each way every day. She says she could not have done it without the support of her loving husband. After working for a short time as a dietitian, she began working with Robert at his new oil and gas business. Mary Ruth loved traveling with close friends and entertaining them and family at their vacation home on the Blanco River in Wimberley Texas. She loved sewing, music, cooking and hosted many dinner parties with close friends. In 2006 she and Robert moved to Houston and joined Memorial Drive Presbyterian Church. She became involved with the food ministry and had the honor of being asked to become an elder.

Marilyn Waggoner joined her Heavenly Father on Friday, December 13th, 2024. Born on March 26th, 1936, Marilyn was the daughter of Louise and Luther Wheeler. Unfortunately, Marilyn lost both of her parents by the age of ten. She was raised by her sister, Barbara Wheeler Cullum. Marilyn responded to these early hardships with a resilience that she carried through her lifetime. She was a graduate of Wichita Falls High School and attended the University of Texas in their Plan II program. She was also a member of Kappa Kappa Gamma Sorority. Marilyn and Thomas "Tommy" Jefferson Waggoner, III, fell in love on a high school trip to Italy and were married 6/23/1956. She was a devoted wife and mother to her three children. She was a founding member of the Junior League of Wichita Falls, an organization close to her heart. In 1969, Marilyn and Tommy moved their family to Dallas, Texas. In the 1970's Marilyn opened a giftshop, "The Tulip Tree," in Highland Park Village with a friend and her sister-in-law. The gift shop was a success and remained the place for gift buying for 15+ years. In 1995, Marilyn and Tommy moved to Barton Creek Lakeside in Spicewood, Texas, before deciding that the Rocky Mountains in Montana were calling. In 2002 they moved to Bigfork, MT and spent 13 wonderful years enjoying Big Sky Country. In 2015 they moved back to Wichita Falls to be closer to family and friends. After losing her husband in 2017, Marilyn took a leap of faith and moved to central Oregon in 2022 to enjoy the mountains of the Pacific Northwest with her daughter. Marilyn had lifelong friends from Wichita Falls of 80+ years that added much joy to her life – "The Falls Girls." Some of

Marilyn's favorite things included summers at Possum Kingdom Lake, watching the Dallas Cowboys (preferably when they were winning which often seems like a distant memory), rooting for the Texas Longhorns football team, traveling all over the world, spending time with her dogs, volunteering, watching Dateline (Lester Holt's #1 fan), playing competitive bridge or any games with friends and family. She loved greasy TexMex food (think cheese enchiladas covered with queso and chopped onions), Dr. Pepper, and vanilla ice cream with chocolate sauce and THREE cherries (not 2 or 4 – had to be 3). Marilyn was always up for any adventure – anything to not be "dull and boring" and be surrounded by the people that she loved. She enjoyed countless hours sitting on the back porch in Oregon admiring nature and keeping an eye on resident birds.



Mary Walton died on her 95th birthday, the 5th of April 2025. Mary Elizabeth Knobelsdorf Walton was born on the 5th of April 1930 to Curtis S. Knobelsdorf and Orphelia Eggert in Houston, where she lived her entire life. Mary was a cheerleader at Lamar High School, class of 1948, where she met her future husband, Lawrence E. Walton, also class of 1948. Mary and Lawrence attended The University of Texas at Austin where Mary became a member of the Delta Delta Delta sorority and married Lawrence in their junior year at UT in 1951. Lawrence graduated first, through the ROTC program at UT and was sent to Korea as an officer, leaving Mary to continue her education. Mary was a true academic, transferring to Houston where she earned her Bachelor of Arts (History and Language Arts) and Master of Education degree (Counseling and Development) from the University of Houston. Mary taught in the H.I.S.D. at the newly opened Robert E. Lee High School and at Holy Ghost Catholic School. Mary then became the counselor at Mt. Carmel Catholic School. Mary raised two children, Martha and David, in the Larchmont subdivision where she, Lawrence and the kids met and nourished lifelong friends. Each summer, Mary and Lawrence escaped the Houston heat with their children, taking two and three-week camping trips through the Rocky Mountains--always with close neighbors and her brother Johnny's family.

Kenneth Wilson passed away on February 20, 2025. He was born in Moscow, Idaho to John Andrew and Marjorie Kress Wilson, and grew up in Austin, Texas, with his younger brothers, Steve and Chris. A proud graduate of Austin High School class of 1959, Ken's athletic talent earned him a football scholarship to Texas A&M. His academic journey took a circuitous route through the University of Texas and Texas State before he returned to A&M for his PhD in Biochemistry. He served honorably in the National Guard although his irreverence got him into trouble on numerous occasions, resulting in KP duty where he honed his potato peeling skills. Ken's adventurous spirit and keen intellect took him around the world, first to Israel's Weizmann Institute, then to the University of Zurich, where he spent eleven years as a researcher and professor. There, he met his wife, Verena, and started a family. In 1982, he moved to the Bay Area to work at Cetus before joining Applied Biosystems in 1984. He rose quickly to Senior VP of Research & Development, playing a key role in genetic instrument development and the Human Genome Project. After retiring in 2000, Ken and Verena returned to Austin, where he enjoyed a leisurely life of golf, fishing, reading, painting, collecting art and travel. From 2005 to 2015, he and his wife spent several months each year volunteering in Cambodia, where Ken established two chemistry labs at the University of Phnom Penh, mentoring and teaching scientific experimentation and critical thinking. They established an endowment at Texas State University to promote collaborative research, teaching and outreach in developing countries that are economically underserved in higher education. These endeavors were among the most rewarding chapters of his life. Ken's many talents topped with smart-witted humor made him unforgettable. Whether standing up for others, playing a prank on his golfing buddies or making sushi for friends and family from a fresh catch, he was admired and loved. Above all he was a proud dad to his three sons and Opa to eight grandchildren, who will always remember him fondly.

Staff

Jeffrey Stuenkel of Austin, Texas passed peacefully on September 24, 2025, at the age of 52. He was born on June 18, 1973 in Austin, Texas to Berthold and Louise Stuenkel. He graduated from Travis High School. He married his wife, Jamie Stuenkel on August 12, 1995 in Austin, Texas. Their daughter, Kylie was born in August 2000 and son, Brady in December 2001.

He attended Texas State University and Austin Community College. He worked as an accountant for several different departments at the University of Texas over his 25 years of service.

Jeff never knew a stranger and loved unconditionally. He loved hunting, fishing and Texas Longhorn football. He was happiest when he was entertaining friends and family, grilling and smoking a brisket or ribs. His kids were his world, and he was an amazing Dad. He was so proud of his kids' accomplishments. He told the best Dad jokes and kept us laughing even in the bad times! He lived to make others happy and is an inspiration to all of us.

He is survived by his wife Jamie, daughter Kylie, son Brady and Father Berthold.

He is preceded in death by his mother, Louise.

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ALUMNI NEWS UPDATE SUBMISSION FORM

All personal and work information submitted is confidential and will not be shared outside of The University of Texas at Austin. All fields are optional but we appreciate your effort to help us keep your information accurate and current.

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Above: Associate Professor Rowan Martindale (left) and students with GEOPAths GO on their trip to Jamacia to study coastal ecosystems. Photo: Rowan Martindale.

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