QUARTERLY NEWSLETTER

APRIL—JUNE

Texas—Louisiana
Carbon Management Community

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WELCOME

Credit: Lamar University

ChemE Camp at Lamar University

Welcome back to the Texas–Louisiana Carbon Management Community (TXLA CMC) newsletter! This quarter, we kicked off another season of outreach, community engagement, and K–12 education initiatives across the region to continue building connections, sharing knowledge, and fostering interest in carbon management.

Among the many activities this quarter, we feature Lamar University's ChemE Camp, a program that gives high school students a chance to explore engineering careers through lab activities, industry tours, and interactive challenges. Programs like this not only inspire the next generation of STEM professionals but also help connect our carbon management mission with broader educational and workforce development goals.

In this quarter's newsletter, we share a new fact sheet on induced seismicity, providing a quick overview to address common questions and concerns from the public.

TXLA CMC UNIVERSITIES

Lamar University

Louisiana State University

Texas A&M University-Corpus Christi

Texas A&M University-Kingsville

The University of Texas at Austin

University of Houston

JOIN OUR PHONE BOOK

Click or Scan

Our phone book connects you to others in the CCS community, enabling meaningful outreach and collaboration. Please feel free to share our newsletter with anyone interested in joining the directory to foster connections.

This project is funded for 2024 through 2026 by the Department of Energy's National Energy Technology Laboratory (DOE-NETL) project DE-FE32361.

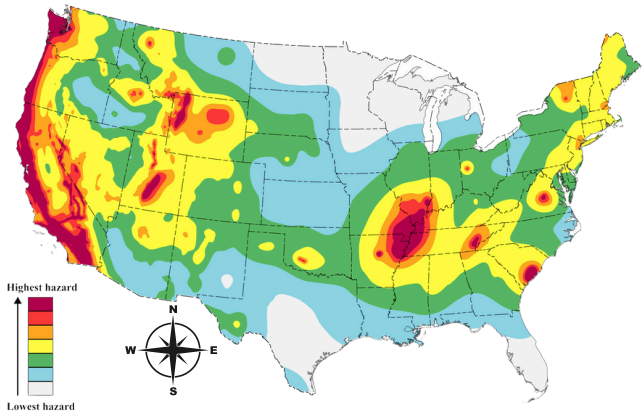
QUICK LOOK: CCS AND SEISMICTY

The likelihood of CCS inducing seismicity is low and can be mitigated, but how do we know that?

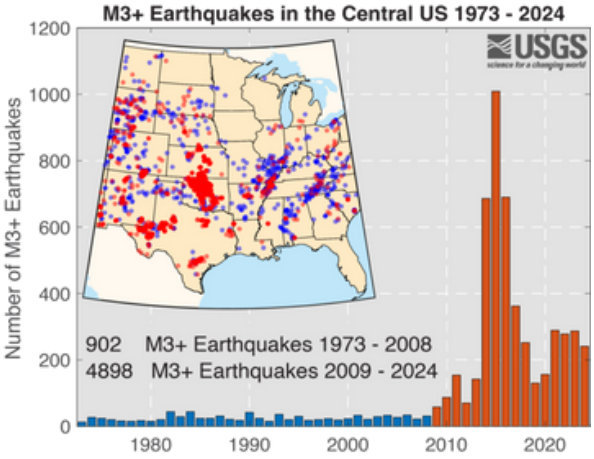
The precise science of predicting when and where earthquakes will occur remains elusive, but there is a lot we understand now about reducing risks associated with induced seismicity. Locational history, minifrac tests, and monitoring systems are key tools used to assess and manage risks of induced seismicity associated with CCS operations.

EARTHQUAKE HAZARD AND INDUCED SEISMICITY MAPS

Local geologic conditions play a major role in determining earthquake hazard. For example, the U.S. West Coast experiences more frequent and powerful earthquakes due to its proximity to tectonic plate boundaries and active faults.

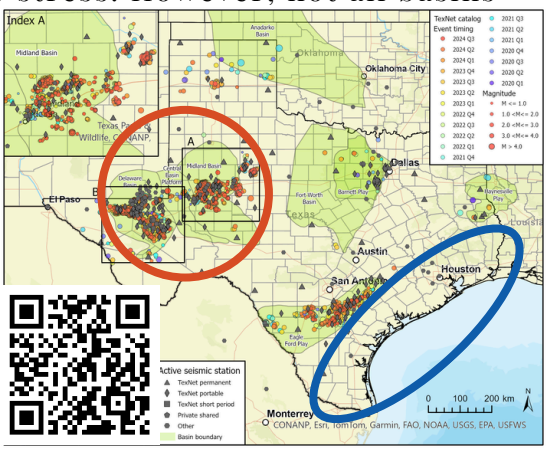


USGS, 2024, Hazards.



USGS, 2025, Induced Earthquakes.

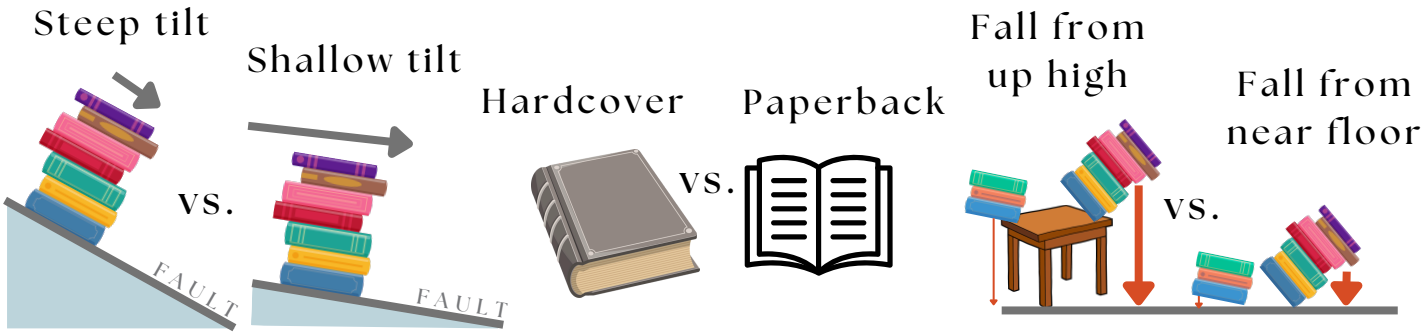
In contrast, Texas saw a rise in induced earthquakes starting in the 2010s because massive saltwater disposals in certain oil-producing regions triggered movement along faults that were already under stress. However, not all basins were equally affected. Earthquakes occurred mainly in areas like the Permian Basin (circled in red), where high injection rates and volumes led to increased pore pressure. When combined with deep injection near highly stressed basement rock, the presence of suitably oriented faults, and older, brittle rock formations, seismic activity was more likely to be triggered. This is not the case in the Gulf Coast Basin (circled in blue), characterized by younger, more ductile rocks, where many CCS projects are planned.



TexNet. 2025, Texas Seismological Network

Geologic conditions influence the strength of an earthquake—the hazard—while the potential impacts determine the risk. Faults with high slip potential, brittle rock formations, and regions already under high stress are more likely to produce stronger earthquakes, especially when additional pressure is applied.

IF BOOKS WERE ROCKS...



Books on a steep tilt require less pressure to trigger sliding and tumbling. Likewise, faults under high shear stress require less of a nudge to trigger slip.

A hardcover book is stiff and resists bending, while a paperback book flexes easily. Likewise, hard, brittle rocks release energy suddenly when they slip. Softer rocks bend and release the energy slowly.

A large stack of books falling from up high has more potential energy and hits harder than a small stack, and both hit harder than if they fell near the floor. Similarly, large, highly stressed faults can produce bigger earthquakes than small, lightly stressed ones.

CCS APPLICATIONS

Earthquakes are naturally occurring. Some are mild while others are dangerous. Risk profiles depend not only on their magnitudes, which can be influenced by local geology, but also on how close they are to population centers, critical infrastructure, and vulnerable communities.

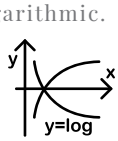
As a part of the CCS project planning process, operators strategize and plan to ensure that there is no risk of dangerous seismic events.

RICHTER SCALE

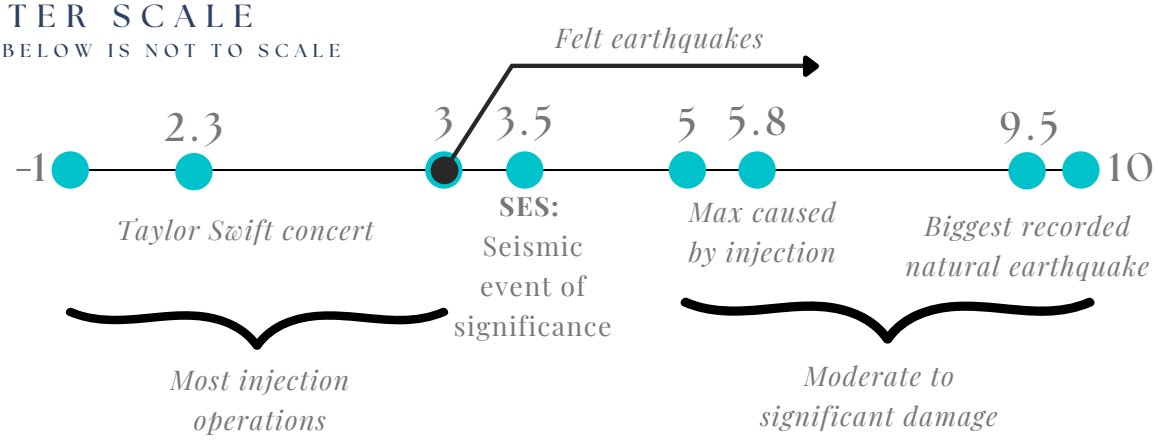
*RANGE BELOW IS NOT TO SCALE

LEARN MORE

The Richter scale is logarithmic.



A whole number increase represents a tenfold increase in energy released!



**In current field research and planned projects, microseismic monitoring tools are deployed to detect any seismicity. Injection operations are usually undetectable with typical seismic sensors.*

TEXAS Geosciences
The University of Texas at Austin
Jackson School of Geosciences
Bureau of Economic Geology

GCCC
GULF COAST CARBON CENTER

TXLA CMC
Texas-Louisiana Carbon Management Community

EDUCATION AND DEVELOPMENT

Advancing CCS education through online training programs, graduate certificates, and digital credentials across Texas institutions

THE UNIVERSITY OF TEXAS AT AUSTIN

Professional Education: Subsurface Skills for CCS

The Gulf Coast Carbon Center launched Subsurface Skills for Carbon Capture and Storage, a self-paced professional training program designed for geoscientists, engineers, and other subsurface professionals.

This comprehensive program guides learners through the entire lifecycle of a carbon storage project, from technical screening and modeling to monitoring and permitting, equipping participants with the practical tools and confidence needed to advance carbon storage development in real-world settings.

UNIVERSITY OF HOUSTON

New Graduate Certificate Program: Energy Innovations in CCUS

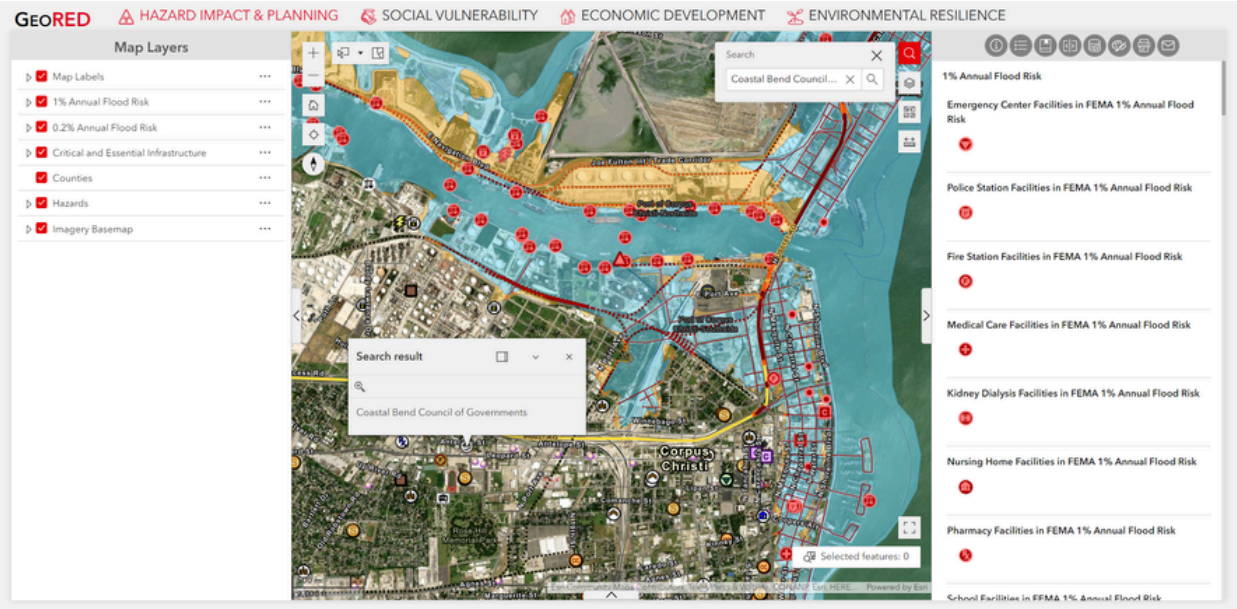
Ahead of the Fall 2025 semester, the University of Houston is set to launch a new Graduate Certificate Program in Energy Innovations in Petroleum Engineering. This intensive two-semester program focuses on carbon capture, utilization, and storage (CCUS) and is tailored for professionals and graduate students aiming to upskill in low-carbon technologies and energy systems innovation.

TEXAS A&M – KINGSVILLE

Digital Badge: Advanced Geomechanics and Carbon Capture and Storage

Texas A&M University-Kingsville (TAMUK) offered a course this summer on advanced geomechanics, with a focus on the impact of pore pressure changes relevant to geological carbon storage. In collaboration with Workforce Development Professionals at TAMUK, they are developing a digital badge program and plan to teach a dedicated carbon capture and storage course next semester. Upon completing courses, students will earn a badge inscribed on their transcripts to recognize their specialized skills and support their professional growth.

TEXAS A&M - CORPUS CHRISTI



GeoRED - Geospatial Resilient Economic Development

GeoRED is a geospatial data platform designed to support smart growth and resilience across the Coastal Bend region of Texas. Originally developed by the Regional Resilience Partnership, this GIS tool provides communities in Aransas, Bee, Refugio, San Patricio, Nueces, Kleberg, and Kenedy Counties with tailored data on regional hazards, economic development, and modeling to help manage disaster and economic risks. As a part of TXLA CMC initiatives, they incorporate carbon capture and storage into this tool, providing local stakeholders with an additional tool to better understand CCS impacts in the region.

Questions or Comments?

Reach us at the Gulf Coast Carbon Center at the Bureau of Economic Geology.

Email: TXLACMC@beg.utexas.edu

Leave a Comment: https://forms.office.com/r/xAGXyxRtJt?origin=lprLink

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