LOCAL NEWS

Why are there thousands of earthquakes in Texas each year now?

Earthquakes are becoming increasingly common in the Lone Star S particularly in West Texas.

Credit: ASSOCIATED PRESS
(AP Photo/Tony Gutierrez)

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Published: **12:51 PM CDT July 25, 2024**
Updated: **11:41 AM CDT July 26, 2024**

SNYDER, Texas — At 10:38 p.m. Monday, the ground began to rumble in West Texas.

The real action was nearly five miles below the surface, where a 4.9-magnitude earthqua happened just west of the Scurry-Fisher county line. A few minutes later, and several mil the northwest, another earthquake rumbled -- this time a 2.8-magnitude rattler. Three mo earthquakes then followed in the same area, all within the same half-hour, according to d from U.S. Geological Survey.

Rumblings -- most likely from the initial 4.9-magnitude earthquake, about 10 miles northw Hermleigh -- were felt across the West Texas region, and reportedly as far away as the D Fort Worth metroplex, about three hours to the east.

Four days later, on Friday, a 5.1-magnitude earthquake in the same area near Hermleigh also reportedly felt as far away as North Texas.

The exact causes of the earthquakes won't be determined until researchers have the ch look into them further. But they were all part of a recent cluster of earthquakes in the He area this week, most of them in the smaller 1.0-2.0-magnitude range, according to USGS

More broadly, they were part of a growing trend in Texas in the last five years: Earthquak becoming increasingly common in the Lone Star State, particularly in West Texas.

In 2023, there were 2,493 earthquakes that registered a 2.0-magnitude or higher on the Richter scale in Texas, according to data compiled by the Bureau of Economic Geology a University of Texas at Austin.

These numbers were similar to those of 2022 when Texas saw 2,601 earthquakes of at l 2.0-magnitude.

But they are also more than double the amount in seen 2020, and eight times the a[illegible]u 2017 -- all according to the bureau, which tracks Texas earthquakes through the Tex[illegible]et Earthquake Catalog.

This increase in earthquakes has been attributed by researchers to the rise of a form of drilling known as hydraulic fracturing, or fracking. The process involves injecting liquid ir well to break up shale and rock to extract oil or gas reserves, as the USGS explains here

Often, the USGS says, it's not the fracking that causes the earthquakes but rather the dis of the large amounts of wastewater it produces.

The disposal of that wastewater -- which sees it injected deep back into the earth's surfa what researchers have identified as the "primary causal agent" of the increased number Texas earthquakes, said Dr. Peter H. Hennings, the principal investigator for the Bureau Economic Geology's Center for Injection and Seismicity Research.

Hennings researches earthquakes and their causes and has authored numerous papers detail the recent rise in earthquakes in Texas.

Hennings said the 4.9-magnitude earthquake near Hermleigh this week was "certainly n For one, Hennings said a 4.9 reading is on the higher end of what Texas usually sees, alt the state has in recent years seen recordings venture past the 5.0 magnitudes.

He also notes that the Hermleigh earthquakes happened within a newer cluster of [illegible]th recorded on the eastern shelf of the Midland Basin. It's just one of many clusters ide[illegible]ifie across the Midland Basin and Delaware Basin, and extending into New Mexico, accordin research Hennings has compiled.

In a 2023 paper published by the Geological Society of America, Hennings and co-autho Michael H. Young presented data that showed the sharp increase in earthquakes in the l years.

While the North Texas area saw an increase in earthquakes about 10 years ago, most of recent rise in earthquakes has been seen in the Delaware and Midland basins of West Te located along the Interstate 10 corridor between Odessa and El Paso.

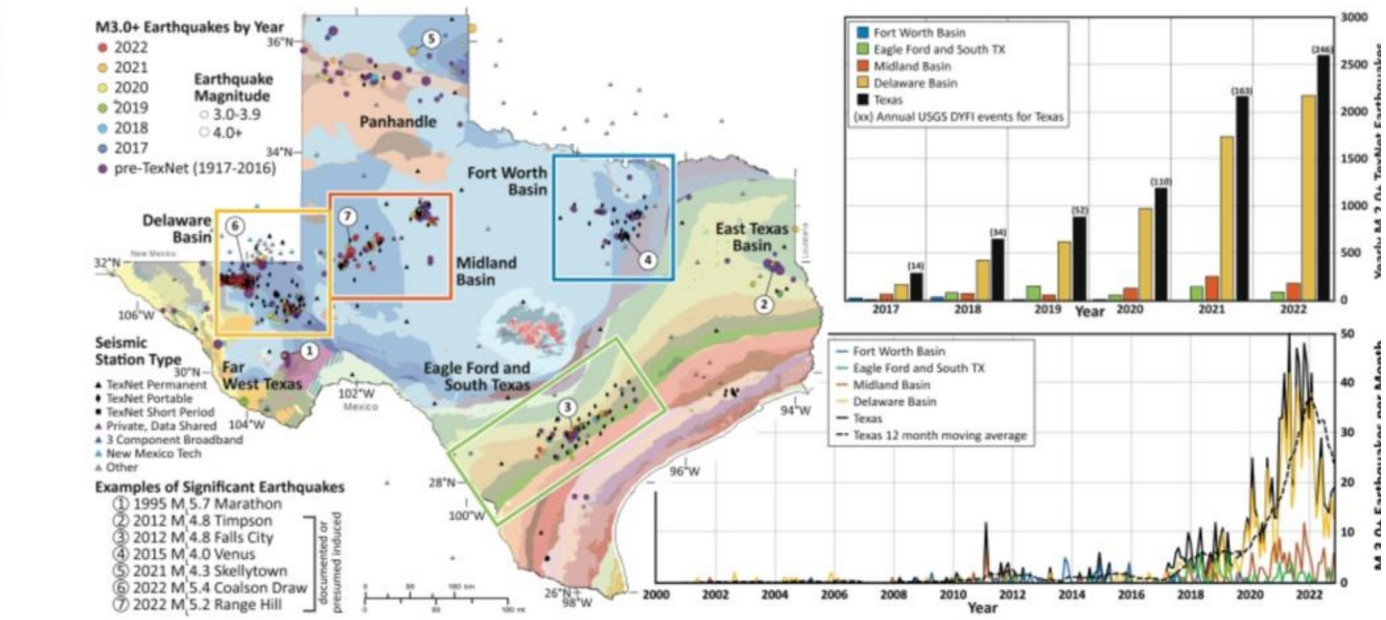

Figure 1. History of cataloged earthquakes in Texas. (Left) Map shows seven principal earthquake-prone regions (black text) in Texas, recorded earthquakes of M ≥3.0, and select si nificant earthquakes, as discussed in the text. Base layer is the *Tectonic Map of Texas* (Ewing, 1990). (Upper right) Graph showing the number of earthquakes of M_L 2.0+ as catalog by TexNet in the five regions indicated and the total number of U.S. Geological Survey "Did You Feel It?" (USGS DYFI) events per year in Texas (U.S. Geological Survey, 202 (Lower right) Graph showing the monthly rate of earthquakes of M ≥3.0 in the five regions indicated and a 12 mo moving average for Texas (TX).

Credit: Peter Hennings

Hennings said his research has shown a clear connection between fracking -- and speci the injecting of wastewater back into the surface -- and earthquakes. In an upcoming pa Hennings and colleague Katie Smye showed the scope of the wastewater injections, say around 45 billion barrels have needed to be disposed of since 2009.

"This injection has altered subsurface stress and caused the widespread developm + o earthquakes on preexisting faults," Hennings and Smye wrote.

Hennings' office has also found that, when the fracking and injections stop, the earthqua tend to stop as well -- although change might not come immediately.

"Even if you stop injection, that pressure takes time to dissipate," Hennings said. "If you v stop injection today, it doesn't mean the earthquakes will stop today... but they still stop."

Hennings said the last decade or so of earthquake activity in Texas has given researche clearer picture of the trend.

"We've learned a lot by watching these processes play out in Texas," Hennings said. "No see it very clearly. It's following what we expect. If the rates of injection increase, I would problematic earthquakes."

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