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NEWS

New Map Reveals More than 250 Fault Lines in Dallas-Fort Worth Area, Illustrating Potential Earthquake Risk

By Jan Wesner Childs · 5 days ago · weather.com



Seismometers like this one help track earthquakes across Texas as part of the TexNet Seismic Monitoring Network.
(Bureau of Economic Geology/University of Texas at Austin.)

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At a Glance

- Dallas-Fort Worth is the most populated region in Texas.
- More than 200 earthquakes have been recorded in North Texas since 2008.
- Researchers plan to release more detailed maps next year.

Researchers have mapped more than 250 potentially earthquake-causing underground fault lines stretching across 1,800 miles in the Dallas-Fort Worth area in North Texas.

And, they say, they are just as likely to cause earthquakes as previous faults that have done so.

The [study](#), published this week in the journal *Bulletin of the Seismological Society of America*, is the most comprehensive fault information ever compiled for the region, according to [a press release](#) from Southern Methodist University, where some of the research was done. The study identified a total of 251 faults in the Fort Worth Basin, but the researchers suspect there are even more.

(MORE: [Lightning Sparks More Than a Dozen Nevada Wildfires](#))

Earthquakes used to be rare in North Texas. But more than 200 have been recorded in the region since 2008, ranging in magnitude from 1.6 to 4.0. Previous studies have found a link between the quakes and the high volume of wastewater injected deep underground from oil and gas operations. The influx of water has been shown to trigger "dead" faults.

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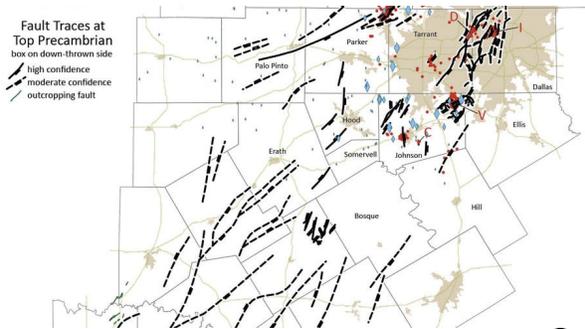
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The new research concluded that the faults remain fairly stable if left undisturbed, but poorly managed wastewater injection greatly raises the chances that the faults will slip and cause earthquakes, according to SMU.

“That means the whole system of faults is sensitive,” Peter L. Hennings, lead author of the study at a research scientist from University of Texas at Austin’s Bureau of Economic Geology, said.



A simplified version of the Dallas-Fort Worth fault map created by a team of researchers. The map includes faults that are visible at the surface (green) and faults that are underground (black). According to the researchers, in the presence of wastewater injection activity, the majority of the faults in the area are as susceptible to slipping as those faults that have already produced earthquakes. The map also marks earthquake locations and waste-water injection well locations and amounts.

(Bureau of Economic Geology/University of Texas at Austin)

Earthquakes in the region have decreased since 2015 as deepwater injection has slowed down, according to a [press release](#) from UT-Austin. The researchers pointed out that while the fault system means earthquakes are possible in many areas, none of the quakes that have occurred so far have been major temblors like those that hit California and other areas.

The strongest of the bunch, a [4.0 earthquake](#), shook Venus, Texas, about 32 miles southwest of Dallas, in May of 2015. While residents reported feeling it, there were only

a few reports of very minor damage and no one was injured.

"This study provides key information to allow the public, cities, state, the federal government and industry to understand potential hazards and to design effective public policies, regulations and mitigation strategies," SMU professor and study co-author Heather DeShon said.

Researchers say that while the new maps are important to understanding the earthquake hazards for Dallas-Fort Worth, they can also be used to study similar impacts in other areas.

Meanwhile, they plan to continue studying the faults under Texas' most populated region.

"In 2020, we will be publishing an updated version of the fault map as well as a comprehensive model that indicates the degree of pressurization that each of the earthquake faults has experienced from wastewater disposal," Hennings said.

"Combined with this current work, the future research will give industry and our regulators powerful tools to use in managing the hazard and reducing risk."

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