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UT scientists lead search for the cause of spike in Texas earthquakes



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Michael Young demonstrates where UT students and faculty have installed earthquake monitoring systems in Texas. (KXAN Photo/ Alyssa Goard).

AUSTIN (KXAN) — Faculty and students at the University of Texas at Austin are leading statewide efforts to pinpoint the causes of the increase in earthquakes in recent years.

UT Austin has led the charge to implement the TexNet monitors — sensors placed around the state to measure earthquake activity. Forty permanent TexNet monitors have been installed around the state as well as 40 movable stations, more than doubling the amount of data the state will be able to take in about seismic activity. Now, UT has also made the data from these sensors available online (<http://www.beg.utexas.edu/texnet>) so that the public can track activity near them in real time.

“Because the public paid for it, they live here, their houses are shaking, they’re living through oil and gas activity and they are citizens of the state, and they have a right and a need to understand what is happening in their communities,” said Michael Young, the associate director of the Bureau of Economic Geology at UT Austin.

The Bureau of Economic Geology was tasked by the governor and state legislature to install TexNet. This monitoring system was authorized in June of 2015 with \$4.47 million in state funding.

Young explained that a spike in earthquake activity in Texas, in particular over the past five years, drew concern from lawmakers and citizens alike.

The TexNet system expects to collect data over the next couple of years in order to find out the root of these problems.

“There could be natural tectonic events, but there are of course a lot of waste water injection wells in the state and there’s a fairly large amount of water that’s being injected, so we’re looking at the position of the injection wells relative to where geological faults are located,” Young said.

The water byproducts of oil and gas production have sparked worries in recent years in Texas.

“What we’re seeing is several peer reviewed papers coming out showing links between earthquakes and disposal wells,” said Robert Williams, the Central and Eastern U.S. Coordinator of the USGS Earthquakes Hazards program. Though, Williams clarified, this waste water injection is different from hydraulic fracturing, or “fracking.”

“As far as I know no one has published a paper in Texas showing a connection between felt earthquakes and a hydraulic fracturing operation,” Williams said. “The state of Oklahoma has shown there are some earthquakes being felt from hydraulic fracturing in Oklahoma over the past year and they’ve been smaller than magnitude 3.4. So it’s possible they’re occurring in Texas, we just don’t have documentation about them.”

Williams explained that over the last eight to 10 years, earthquakes are occurring throughout the state in regions with no history of earthquakes ever before. While none of these earthquakes were of high enough magnitude to cause major damage, Williams explained that

the more small earthquakes a region has, the greater the likelihood a large earthquake will occur.

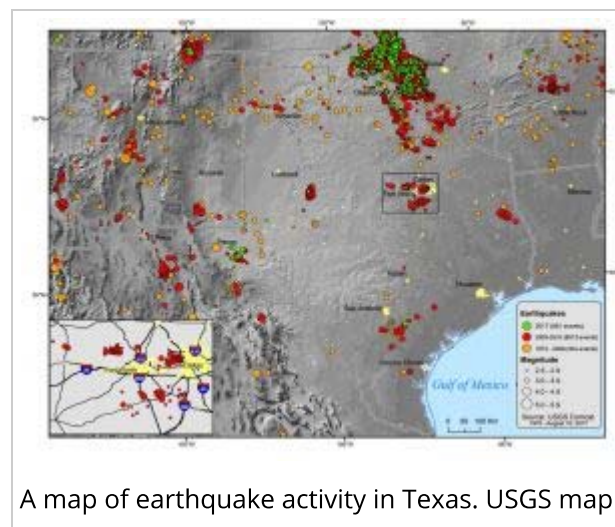
According to the USGS 2016 earthquake in Oklahoma has led scientists to have more concern about earthquakes being induced by human activity. It has also drawn attention to the impacts quakes –even minor ones — can have on infrastructure.

Williams added that in the Permian Basin area, from Pecos to Fort Stockton, has seen an increase in earthquakes over the past year. The USGS has seen earthquakes increase in Texas since 2008 and 2009, starting with the Dallas-Fort Worth area near the DFW airport. In 2013, earthquakes in Azle, Reno and Timpson, Texas also fueled public worries. Williams said academic writings have showed that each of these events may be tied to waste water disposal.

Back at UT Austin, Young explained that even if their research shows that waste water disposal is linked to the tremors, the solution may not necessarily be to stop wastewater injection. Sometimes, Young added that injecting water can be a safer alternative to moving water through tanks and pipelines.

The goal of their research is to find out what the best options will be, both for the Texas oil and gas industry and for the public.

UT is also collaborating with researchers at Texas A&M and Southern Methodist University on this research. The closest TexNet mapping stations to Austin are in Muldoon (near La Grange), Hondo, and Brady. You can see the [full map here \(http://www.beg.utexas.edu/texnet/catalog\)](http://www.beg.utexas.edu/texnet/catalog).



A map of earthquake activity in Texas. USGS map.

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