

Alpine Avalanche

Alpine puts earthquakes on the map

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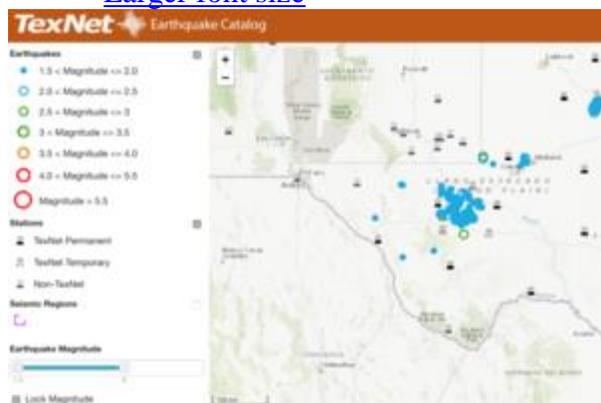
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The Bureau of Economic Geology's TexNet project allows real time tracking of Texas earthquakes through its earthquake catalog and website. The bureau has been collecting data since Jan. 2017 from 18 recently installed seismometers across Texas, bringing the state's total permanent seismic stations to 40. Courtesy photo

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By Shawna Graves Senior Staff Reporter | [0 comments](#)

Alpine is playing a critical role in data collection for the state's new earthquake monitoring network, TexNet, with a seismic monitoring station housed at the bottom of a 25-foot bore hole in bedrock on Sul Ross State University property.

TexNet includes 22 permanent monitoring stations, bringing the state's total to 40, and was authorized by Governor Greg Abbott and the Legislature in 2015 with \$4.47 million in funding.

Each station can detect seismic waves generated by energy released from earthquake events. The amount of energy an earthquake releases is measured as its magnitude on the Richter scale, with 1 being virtually undetectable shaking on Earth's surface, to 7 or higher, a level that can cause considerable structural damage.

Seismologists use data gathered from monitoring stations to reveal the source and depth of an earthquake in Earth's subsurface, the location of its surface expression, its magnitude, and other information.

Before TexNet, the state's 18 permanent stations were only able to measure quakes with a magnitude of 2.5 or greater, according to TexNet project co-principal investigator Peter Hennings, PhD, with the University of Texas at Austin Bureau of Economic Geology.

Hennings explained that those measurements were not very precise as far as location since Texas is a big state, and there were not enough stations to make more reliable measurements. The improved TexNet system measures quakes as low as magnitude 1.3.

There are naturally occurring earthquakes in Texas, with the largest in recorded history taking place in 1931 in Valentine with a magnitude 6.5, but there has been an increase of induced earthquakes over the past 10 years, Hennings said.

"Especially in very small earthquakes. There's been a pretty dramatic increase in the number of these small, small earthquakes," he noted.

The increase in seismicity is widely attributed to deepwater injection wells, Hennings said.

Deepwater injection wells place fluids associated with oil and gas fracking deep underground into porous rock formations such as sandstone or limestone.

To put things in perspective, Hennings explained that only a small number of the roughly 8,000 deepwater injection wells in the state were associated with seismicity.

The information provided by the monitoring network will be used to create a management framework for deepwater injection wells, insuring that future seismicity, "is nothing more than an occasional nuisance," Hennings said.

TexNet will help pinpoint sensitive areas and other key information to guide future best practices. Hennings pointed out it was the job of the Texas Railroad Commission to use the data for this managed outcome.

"Our project's goal, and the regulator's goal in the state of Texas, is for this to be effectively managed," he said.

Besides accomplishing this imperative, the project will result in a plethora of data about subsurface geology, helping to paint a better picture of what's going on down below.

“This data is going to help us understand earthquakes and the physics of faults,” Hennings said.

The public can follow seismicity in real time on the TexNet website and visit their frequently-asked-questions page at beg.utexas.edu/texnet.