

Hydro-fracking and earthquakes? Uh-oh...

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by [Kate Mackenzie](#)

The shale gas industry won't like this one: [a study](#) has found that a shale gas saltwater disposal well in the Barnett Shale may have caused some earthquakes there.

Researchers from University of Texas and Southern Methodist University looked at three sets of earthquakes in the Dallas-Forth Worth region in 2008 and 2009. The biggest of these had a magnitude of 3.3 (though the most recent event has not yet been studied in detail).

Earthquakes caused by oil and gas drilling are not unknown, as the map shows, and the study's authors cite examples going back to the early 20th century, with magnitudes of up to 4.6. As for the Dallas-Fort Worth earthquakes, they observe:

It is plausible that the fluid injection in the southwest SWD well could have affected the in-situ tectonic stress regime on the fault, reactivating it and generating the DFW earthquakes.

It's not quite that simple, though.

They add:

More than 200 saltwater disposal wells are active in the area of Barnett production. If the DFW earthquakes were caused by saltwater injection or other activities associated with producing gas, it is puzzling why there are only one or two areas of felt seismicity.

So, still something of a mystery, then - but they certainly didn't want to rule out the well as the cause.

The study was published in The Leading Edge, a magazine that is published by The Society of Geophysicists, but is [not peer reviewed](#):

TLE publishes articles on all aspects of geophysical technology well before these areas have undergone enough field testing for rigorous peer review.

So in itself, the study probably won't be viewed as proving anything - except that more investigation is probably warranted. However it's not a conclusion that the booming shale gas industry will be keen on, especially as horizontal hydraulic fracturing techniques have already [drawn some scrutiny](#) in Congress, and a recent study of air quality near Barnett Shale wells found [several exceeded safe levels](#); although the more serious cases appeared to be fixed easily by maintenance.

However the question of shale gas wells is far from settled for many people - though others believe that, even if health and environmental problems are proved, the technology will be developed to take care of it.

Shale gas, meanwhile, isn't the only new-ish energy development to raise drilling concern: remember that geoen지니어ing projects in Switzerland and California were effectively [halted by concerns](#) they were causing earthquakes. And, as the Forth Worth study's authors point out, public concerns about sequestering carbon dioxide for CCS will also need to be allayed as these projects roll out.

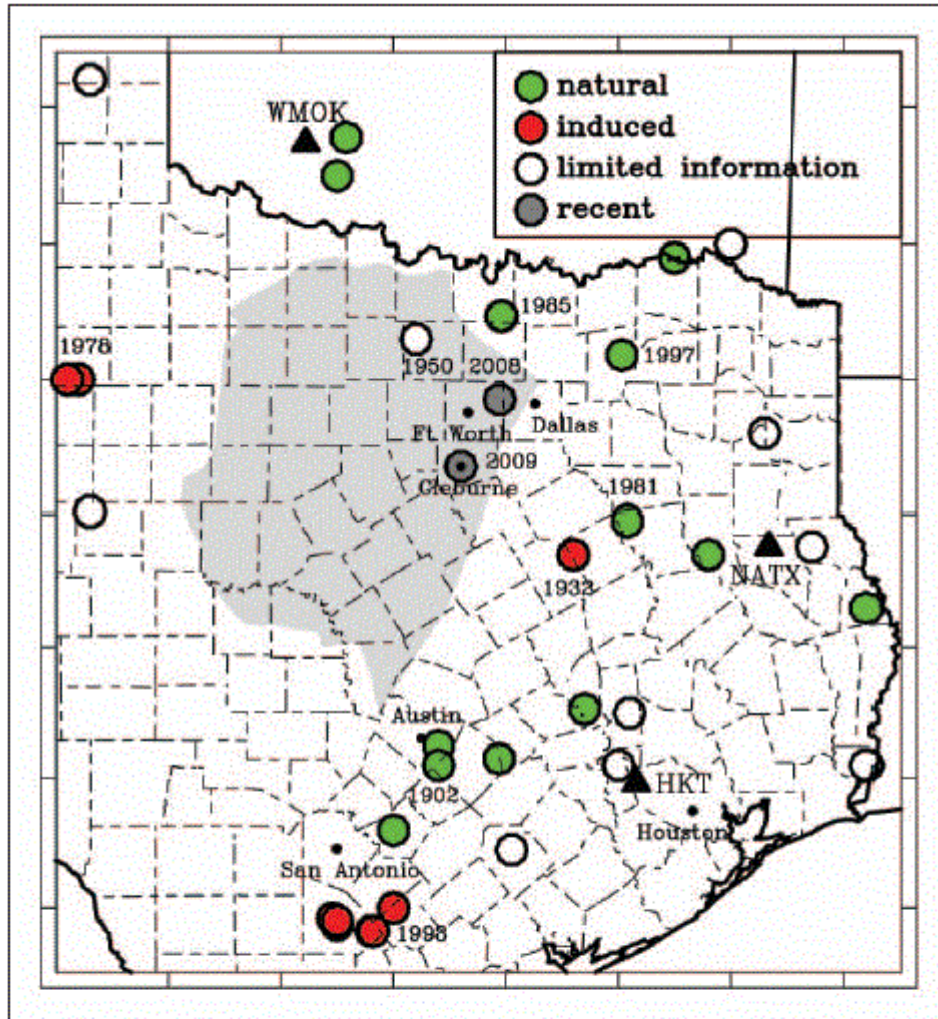


Figure 1. Map of eastern Texas, showing historically felt earthquakes (circles), continuously operating seismograph stations (triangles), and extent of the Barnett Shale (shaded area), the focus of increased natural gas production since about 2000. Colors indicate whether earthquakes are probably of natural origin, induced by human activity such as fluid injection or petroleum production, recent, or origin uncertain. Earthquakes labeled 1902, 1932, 1978, 1985, 1993, 1997, 2008, and 2009 are mentioned in the text.