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No Evidence Drilling Caused Earthquake In Texas, Finds New Study

By News Staff | April 13th 2016 11:23 AM |  Print |  E-mail |  Track Comments

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The most comprehensive analysis to date of a series of earthquakes that included a 4.8 magnitude event in East Texas in 2012 didn't find evidence that the earthquakes were caused by wastewater injection - and they the difficulty of trying to claim earthquakes were caused by human activity, at least using currently available subsurface data.

The study was published April 13 in the *Journal of Geophysical Research: Solid Earth*, and focused on an earthquake sequence near Timpson, Texas.

Activists had claimed the earthquakes were due to wastewater injection related to oil drilling. To determine whether the earthquakes could have been caused by the injection of fluid into the underground geological formation, researchers built a computer model for this site that simulates the effects of fluid injection on the stability of the fault that potentially generated the earthquakes.

Obviously numerical models for real world non-linear behavior have multiple issues, so the researchers from The University of Texas at Austin Bureau of Economic Geology used a range of likely values for input parameters. Those parameters included physical properties of the reservoir and the orientation of the fault. Earthquakes were generated using a certain range of input parameters, but no earthquakes were generated in simulations using a wider set of equally probable parameters.

The 4.8 magnitude earthquake researchers looked at in this study occurred on May 17, 2012. It was the largest ever recorded in the area and followed a series of smaller earthquakes that started in April 2008, some 17 months after two wastewater injections wells began operating nearby. The wells are used to dispose of saline water that is produced with oil and gas from deep hydrocarbon reservoirs.

The researchers tested a number of likely scenarios to assess if the volume and rate of fluid injected into the disposal wells were high enough to cause nearby faults to slip. Earthquakes occur when faults slip, a process that is aided by the high pressure generated in the porous rock formation during wastewater injection, but also occurs by natural tectonic processes.

Previous studies relied on the timing and proximity of wastewater injection to earthquakes to decide if earthquakes were induced by human activity - correlation became causation.

TexNet, which was authorized and funded by the Texas Legislature and Gov. Greg Abbott last year, will improve the state's ability to more rapidly and more accurately investigate earthquakes.

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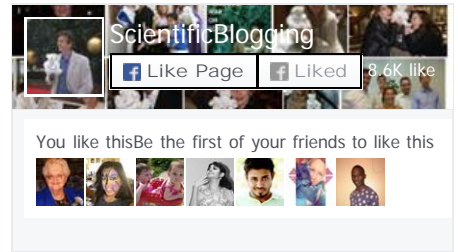
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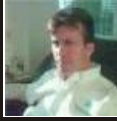
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