

and quakes -- proof researchers weren't looking for

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o Stanford University researchers warned last year that carbon sequestration could lead to earthquakes. Frohlich wondered, "Where's the proof?"

he found it himself, underneath a Texas oil field

ound injection of carbon dioxide to boost oil production "may have contributed to triggering" earthquakes north of Snyder, Texas, several years ago, according to a study released yesterday by Frohlich, a research scientist at the University of Texas' Institute for Geophysics, and visiting scientist Wei Cui. The findings are being published in the Proceedings of the National Academy of Sciences.

In addition to the discussion begun last year when two Stanford geophysicists said carbon capture and sequestration (CCS) wouldn't work on a large scale because it would cause earthquakes. The problem with Frohlich's thought, was that no one had ever seen earthquakes caused by burying carbon under the ground.

Frohlich said he didn't set out to find such a quake

he'd suggested to his colleague, who is visiting from China University of Geosciences in Beijing, that he look for earthquakes that had taken place in the Cogdell oil field near Snyder. A production-boosting technique called "water flooding" had been linked to decades of earthquakes in the area.

Water flooding had started again in 2006 after a 24-year absence. By the end of 2011, there had been 18 earthquakes of magnitude 3 or greater. The largest was magnitude 4.3. That's strong enough to be widely felt, but not very damaging.

Frohlich, who has done extensive research on quakes caused by injection of drilling wastewater, though he was not able to locate some of the faults that had been activated by water flooding. They could take advantage of an array of seismic instruments, called USArray, temporarily installed in the area in 2009 and 2010. It provided much more precise readings on the earthquakes that occurred while it was in place.

And something they hadn't expected-- a close correlation between carbon dioxide injections and earthquakes.

When he looked at the injection data, it suggested CO2," Frohlich said.

Frohlich added that it's not definitive proof. "You can't prove it. You'd say gas is the most likely candidate

ntists found that two nearby oil and gas fields experienced no earthquakes during that time, even
d similar amounts of carbon dioxide injection

ossible that in many locations large-volume CO2 injection may not induce earthquakes," the study

ng else they found is that the people who live in the area aren't too worried about earthquakes, e
the realm of magnitude 4 or 5

in Snyder tolerate earthquakes more than people in other places," hesaid. "If there's a 4 or a 5, p
n pumping oil.'