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## Earthquake experts gather in Norman

**BYLINE:** Sarah Terry-Cobo**SECTION:** NEWS**LENGTH:** 442 words

NORMAN - Scientists threw all the puzzle pieces on the floor Wednesday at a geology conference. State, federal and university researchers are sharing information as they work to understand Oklahoma's complex and evolving seismic picture.

Oklahoma Geological Survey Director Jeremy Boak said his goal is to get as many earthquake scientists as possible in a single room so they can respond faster to earthquakes. The sooner Boak's agency can get relevant earthquake information to regulators, the quicker regulators can act to mitigate potential risk from disposal wells.

The two-day seismic workshop was held at the Moore Norman Technology Center in Norman and was hosted by the U.S. Department of Energy, the National Energy Technology Laboratory, and Oklahoma Secretary of Energy and Environment Michael Teague. Staff members from state geological surveys in Arkansas and Kansas and the Texas **Bureau of Economic Geology** discussed how each state reacted to temblors.

There's still no definitive answer on whether oil and gas wastewater injection triggered Saturday's temblor in Pawnee, Boak said. The U.S. Geological Survey upgraded the temblor on Wednesday from a magnitude 5.6 to a magnitude 5.8, the strongest documented earthquake in Oklahoma history.

USGS and OGS scientists need more equipment in Oklahoma to accurately measure earthquakes' strength and location. USGS agency staff members worked on Tuesday and Wednesday to move equipment from Fairview to Pawnee, to record aftershocks.

USGS scientist Daniel McNamara said he needs a denser network of seismographic monitors to record strong ground motion. The current sensors can estimate approximate epicenters, but can't accurately measure how strong the earth's surface shakes. That's important for developing national hazard models, he said. But seismic equipment is expensive, and he said he doesn't expect more money from the federal budget.

Boak said his staff would like at least one highly sensitive monitor for each county, but that could cost as much as \$3 million.

Stanford Geomechanics Ph.D. candidate Rall Walsh said his research is focused on providing calculations for how much stress Oklahoma's faults can take before triggering a temblor. Oil and gas operators could use those calculations in managing field operations and regulators could use that information to develop policy.

Walsh said he's a scientist, and wouldn't discuss policy matters for Oklahoma regulators.

"I view myself as a calculator, rather than a decision-maker," Walsh said.

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