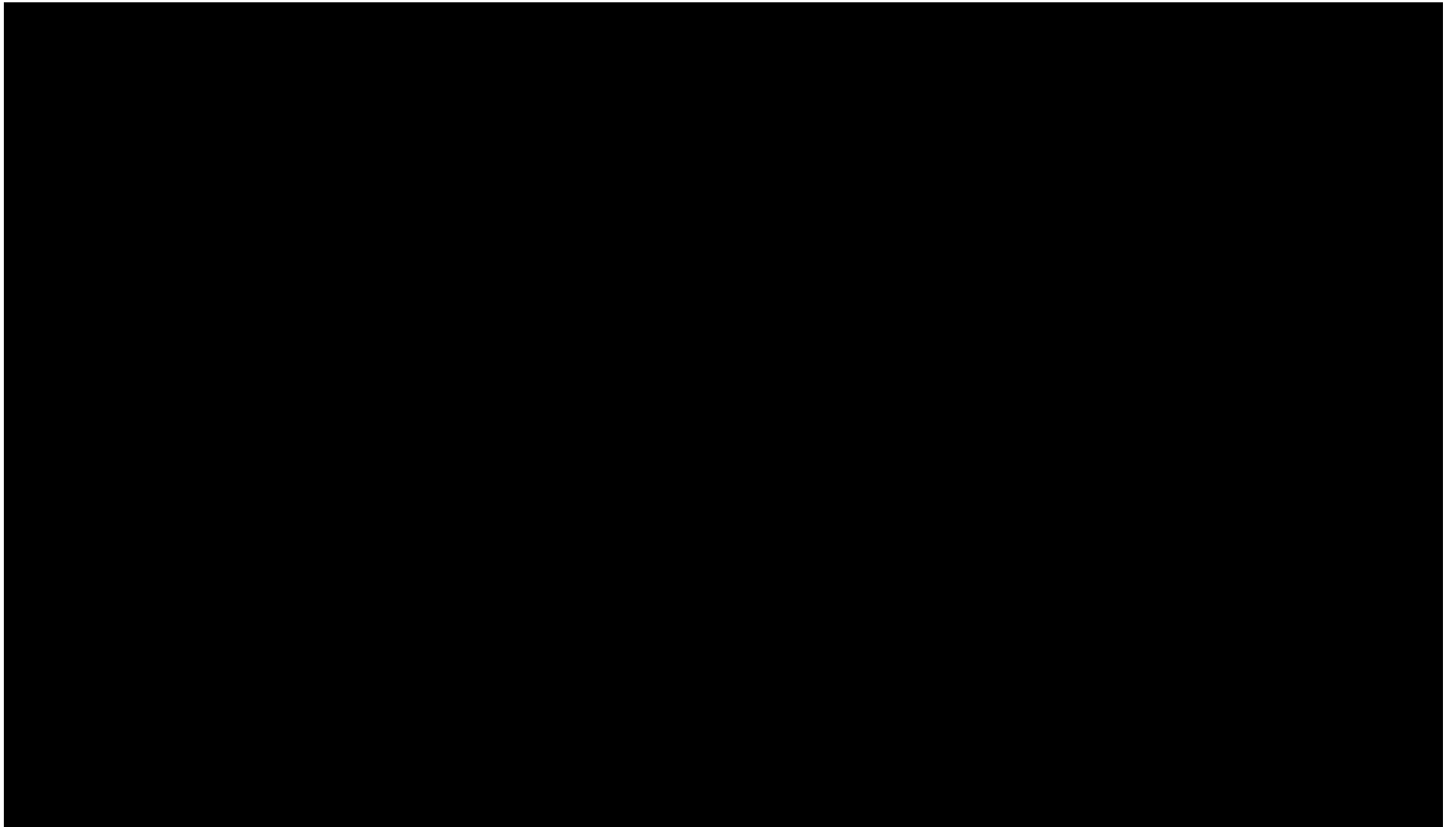


# Researchers gaining better understanding of seismicity

UT's CISR set to turn its attention to West Texas

By Mella McEwen mmcewen@mrt.com, Midland Reporter-Telegram Updated 10:15 pm, Thursday, July 20, 2017

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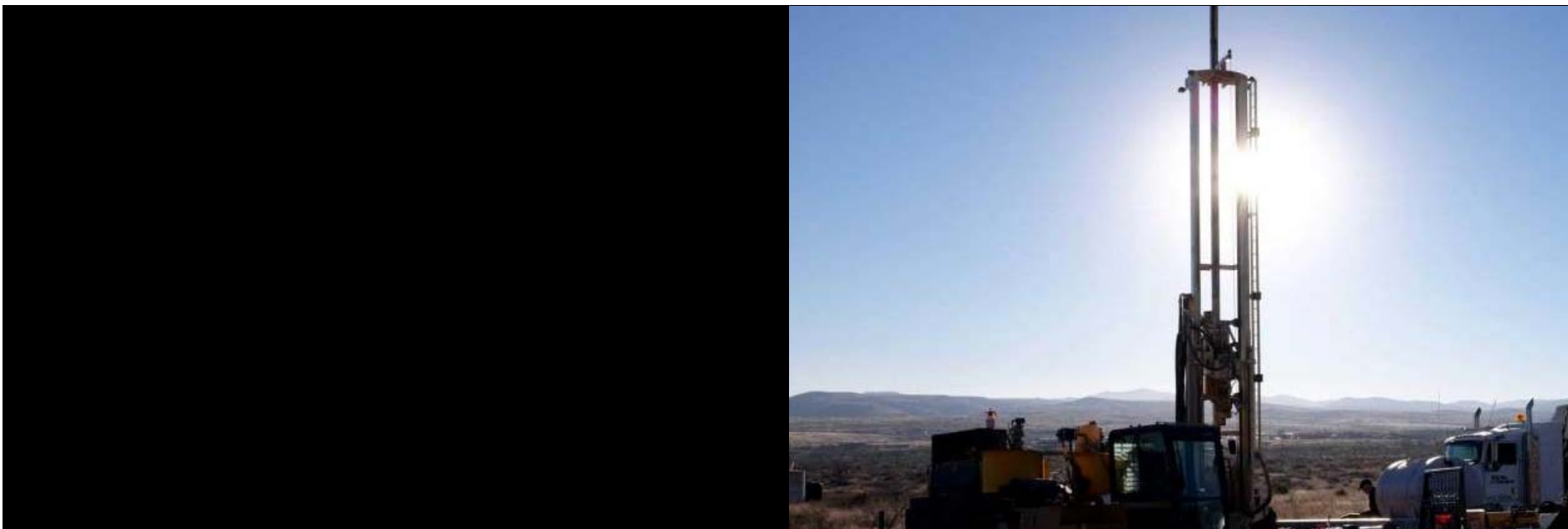


Photo: Lydia DePillis /Houston Chronicle

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IMAGE 1 OF 2

Scientists from the University of Texas and a contractor, Nanometrics, install a seismometer on a hillside owned by Sul Ross University in Alpine.

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Efforts to fill in the gaps of what is not known about seismicity in the Lone Star State is beginning to pay off.

[Peter Hennings](#), a principal investigator in the [Center for Integrated Seismicity Research](#) at the [University of Texas' Bureau of Economic Geology](#), said additional data points from a larger number of monitoring stations revealed, for instance, seismic activity around Pecos that is more frequent than thought, with almost continuous microseismic events that can't be felt at the surface.

Addressing members of the Midland chapter, [Society of Independent Professional Earth Scientists](#) (SIPES) Wednesday at [Midland Country Club](#), Hennings said researchers are about halfway finished with their work studying seismicity in the Fort Worth Basin and are in the process of turning their attention to the greater West Texas region.

According to the center's most recent project update in May, it has scouted additional sites for portable monitoring stations in West Texas. Also, the TexNet monitoring system cataloged 113 events in May, mostly in West Texas. Alongside Pecos, [Snyder](#) and its Cogdell area have seen events, the center reported.

While the Texas trajectory is not near as active as in Oklahoma, Hennings said the state's seismicity has changed along with industry practices.

He offered a timeline for Texas, where from 1925 to 1940, seismicity was related to the high volumes of oil produced from shallow reservoirs. After 1950, those events

accompanied secondary oil recovery operations, primarily waterfloods. And since around 2008, events have occurred near high-volume wastewater injection sites.

Hennings said Texas has seen a steady increase in seismicity since around 2008, from two or three events that could be felt on the surface to up to 15 per year.

Hennings told his audience researchers, who have been busy building models of everything from water injection perforations to faults to study the Fort Worth Basin, “look forward to doing the same in West Texas.”

He urged those in the audience to assist by providing as much of their injection data as they're willing or able to offer, from volumes to perforation locations to pore pressures.

“Subsurface pressure information is vital to understanding what's going on,” he said. “We rely on operators to help with our efforts on data.”

Additional data has given researchers confidence that the surge in seismic activity in the Central U.S., from Arkansas, Kansas and Oklahoma into parts of Texas can be associated with the surge of wastewater disposal from oil field operations. The correlation is strong, he said, “but that doesn't equate to correlation,” which is the task of the center.

“It's important to acknowledge that there are 50,000 injection wells permitted since the 1930s, 34,000 of them for enhanced oil recovery and 8,000 for Class 2 injection into the subsurface,” Hennings said. “There are many injection areas in Texas but only a few are associated with seismicity. It's only a few wells in a few places.”

Interestingly, he told the gathering that while wastewater injection is widely accepted as responsible for seismic events in the central U.S., in Canada fault systems are especially sensitive to hydraulic fracturing.

That underscores how complex geologic systems are and their structural diversity, even in the Permian Basin from the Central Basin Uplift to the Delaware and Midland basins.

The good news is that actions taken by Oklahoma officials to mitigate seismic events by reducing or eliminating water injection in sensitive areas is proving to be successful, Hennings said.

“Areas that need mitigation can be mitigated effectively and quickly,” he said.

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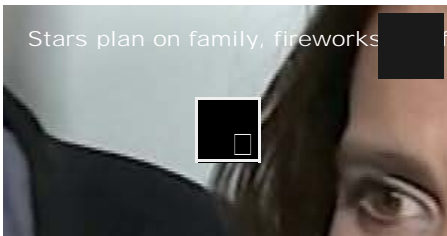
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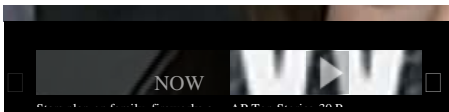
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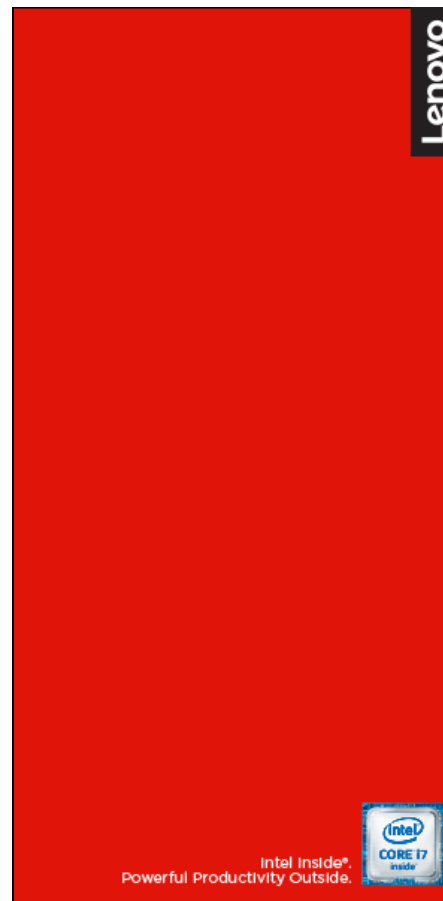
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