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**Geology; New Findings from University of Texas Austin in Geology Provides New Insights (Y Earthquakes Induced By Wastewater Injection, Part II: Statistical Evaluation of Causal Factors and Seismicity Rate Forecasting)**

510 words

30 October 2020

Science Letter

SCLT

1345

English

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2020 NOV 6 (NewsRx) -- By a News Reporter-Staff News Editor at Science Letter -- Current study results on Geology have been published. According to news reporting out of Austin, Texas, by NewsRx editors, research stated, "Wastewater disposal has been reported as the main cause of the recent surge in seismicity rates in several parts of central United States, including Oklahoma. In this article, we employ the semi-empirical model of the companion article (Grigoratos, Rathje, et al., 2020) first to test the statistical significance of this prevailing hypothesis and then to forecast seismicity rates in Oklahoma given future injection scenarios."

Funders for this research include State of Texas through the TexNet Seismic Monitoring Project at the **Bureau of Economic Geology** of the University of Texas, Industrial Associates of the Center for Integrated Seismic Research (CISR) at the **Bureau of Economic Geology** of the University of Texas, Doctoral Program of the University School of Advanced Studies of Pavia (IUSS, Italy).

Our news journalists obtained a quote from the research from the University of Texas Austin, "We also analyze the observed magnitude-frequency distributions, arguing that the reported elevated values of the Gutenberg-Richter b-value are an artifact of the finiteness of the pore-pressure perturbation zones and a more appropriate value would be close to 1.0. The results show that the vast majority (76%) of the seismically active blocks in Oklahoma can be associated with wastewater disposal at a 95% confidence level. These blocks experienced 84% of the felt seismicity in Oklahoma after 2006, including the four largest earthquakes. In terms of forecasting power, the model is able to predict the evolution of the seismicity burst starting in 2014, both in terms of timing and magnitude, even when only using seismicity data through 2011 to calibrate the model."

According to the news editors, the research concluded: "Under the current disposal rates, the seismicity is expected to reach the pre-2009 levels after 2025, whereas the probability of a potentially damaging M-w  $\geq 5.5$  event between 2018 and 2026 remains substantial at around 45%."

This research has been peer-reviewed.

For more information on this research see: Y Earthquakes Induced By Wastewater Injection, Part II: Statistical Evaluation of Causal Factors and Seismicity Rate Forecasting. Bulletin of the Seismological Society of America, 2020;110(5):2483-2497. Bulletin of the Seismological Society of America can be contacted at: Seismological Soc Amer, 400 Evelyn Ave, Suite 201, Albany, CA 94706-1375, USA.

Our news journalists report that additional information may be obtained by contacting Lason Grigoratos, University of Texas Austin, Austin, TX 78712, United States. Additional authors for this research include Ellen Rathje, Paolo Bazzurro and Alexandros Sawaidis.

Keywords for this news article include: Austin, Texas, United States, North and Central America, Geology, University of Texas Austin.

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Document SCLT000020201030egau000v3