
Geology; New Geology Findings Has Been Reported by Investigators at University of Texas Austin (Earthquakes Induced By Wastewater Injection, Part I: Model Development and Hindcasting)

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2020 NOV 6 (NewsRx) -- By a News Reporter-Staff News Editor at Science Letter -- New research on Geology is the subject of a report. According to news reporting originating in Austin, Texas, by NewsRx journalists, research stated, "In the past decade, several parts of central United States, including Oklahoma, have experienced unprecedented seismicity rates, following an increase in the volumes of wastewater fluids that are being disposed underground. In this article, we present a semi-empirical model to hindcast the observed seismicity given the injection time history."

Financial supporters 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.

The news reporters obtained a quote from the research from the University of Texas Austin, "Our proposed recurrence model is a modified version of the Gutenberg-Richter relation, building upon the seismogenic index model, which predicts a linear relationship between the number of induced events and the injected volume. Our methodology accounts for the effects of spatiotemporal pore-pressure diffusion, the stressing-rate dependency of the time lag between injection and seismicity rate changes, and the rapid cessation of seismicity upon unloading. We also introduced a novel multiscale regression, which enabled us to produce grid-independent results of increased spatial resolution. Although the model is generic to be applicable in any region and has essentially only two free parameters for spatial calibration, it matches the earthquake time history of Oklahoma well across various scales, for both increasing and decreasing injection rates."

According to the news reporters, the research concluded: "In the companion paper (Grigoratos, Rathje, et al., 2020), we employ the model to distinguish the disposal-induced seismicity from the expected tectonic seismicity and test its forecasting potential."

This research has been peer-reviewed.

For more information on this research see: Earthquakes Induced By Wastewater Injection, Part I: Model Development and Hindcasting. Bulletin of the Seismological Society of America, 2020;110(5):2466-2482. 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 correspondents report that additional information may be obtained by contacting Iason Grigoratos, University of Texas Austin, Austin, TX 78712, United States. Additional authors for this research include Ellen Rathje, Paolo Bazzurro and Alexandros Savvaidis.

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

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