Science - Geoscience; New Geoscience Research Has Been Reported by Researchers at University of Texas Austin (Thousands of Induced Earthquakes per Month in West Texas Detected Using EQCCT)

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2024 JUN 14 (NewsRx) -- By a News Reporter-Staff News Editor at Science Letter -- Fresh data on geoscience are presented in a new report. According to news originating from Austin, Texas, by NewsRx editors, the research stated, "West Texas has been a seismically active region in the past decade due to the injection of industrial wastewater and hydrocarbon exploitation. The newly founded Texas seismological network has provided a catalog that characterizes the intense seismicity down to a magnitude of 1.5 Ml."

Financial supporters for this research include Texas Seismological Network Project; Texas Consortium of Computational Seismology; Zhejiang University.

Our news reporters obtained a quote from the research from University of Texas Austin: "However, there are numerous small-magnitude events (Ml < 1.0) occurring every day that are not analyzed and reported, due to the prohibitively high workload to manually verify the picks from automatic picking methods. We propose to apply an advanced deep learning method, the earthquake compact convolutional transformer (EQCCT), to unleash our power in analyzing hundreds of small earthquakes per day in West Texas. The EQCCT method is embedded in an integrated-detection-and-location framework to output a highly complete earthquake catalog, given a list of available seismic stations, in a seamless way. The EQCCT has enabled us to detect and locate 50-times more earthquakes (mostly smaller than magnitude 1) than we previously could. We applied the EQCCT-embedded detection and location workflow to the Culberson and Mentone earthquake zone (CMEZ) in West Texas and detected thousands of earthquakes per month for consecutively three months. Further relocation of the new catalog revealed an unprecedentedly high-resolution and precise depiction of shallow and deep basement-rooted faults."

According to the news editors, the research concluded: "The highly complete catalog also offers significant insights into the seismo-tectonic status of the CMEZ. Association with nearby injection activities also revealed a strong correlation between the rate of injected fluid volume and the number of small earthquakes."

For more information on this research see: Thousands of Induced Earthquakes per Month in West Texas Detected Using EQCCT. Geosciences, 2024,14(5):114. (Geosciences - http://www.mdpi.com/journal/geosciences). The publisher for Geosciences is MDPI AG.

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Our news journalists report that more information may be obtained by contacting Yangkang Chen, **Bureau of Economic Geology**, John A. and Katherine G. Jackson School of Geosciences, University of Texas Austin, Austin, TX 78712, United States. Additional authors for this research include Alexandros Savvaidis, Omar M. Saad, Daniel Siervo, Guo-Chin Dino Huang, Yunfeng Chen, Iason Grigoratos, Sergey Fomel, Caroline Breton.

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