Science; University of Texas Austin Researchers Detail Research in Science (Proposal for a mechanical model of mobile shales)

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2021 DEC 31 (NewsRx) -- By a News Reporter-Staff News Editor at Science Letter -- Data detailed on science have been presented. According to news originating from the University of Texas Austin by NewsRx editors, the research stated, "Structural systems involving mobile shale represent one of the most difficult challenges for geoscientists dedicated to exploring the subsurface structure of continental margins."

Financial supporters for this research include Applied Geodynamics Laboratory.

Our news correspondents obtained a quote from the research from University of Texas Austin: "Mobile-shale structures range from surficial mud volcanoes to deeply buried shale diapirs and shale-cored folds. Where mobile shales occur, seismic imaging is typically poor, drilling is hazardous, and established principles to guide interpretation are few. The central problem leading to these issues is the poor understanding of the mechanical behaviour of mobile shales. Here we propose that mobile shales are at critical state, thus we define mobile shales as 'bodies of clay-rich sediment or sedimentary rock undergoing penetrative, (visco-) plastic deformation at the critical state'. We discuss how this proposition can explain key observations associated with mobile shales. The critical-state model can explain the occurrence of both fluidized (no grain contact) shales (e.g., in mud volcanoes) and more viscous shales flowing with grain-to-grain contact (e.g., in shale diapirs), mobilization of cemented and compacted shales, and the role of overpressure in shale mobility."

According to the news reporters, the research concluded: "Our model offers new avenues for understanding complex and fascinating mobile-shale structures."

For more information on this research see: Proposal for a mechanical model of mobile shales. Scientific Reports, 2021,11(1):1-11. (Scientific Reports - http://www.nature.com/srep/index.html). The publisher for Scientific Reports is Nature Portfolio.

A free version of this journal article is available at https://doi.org/10.1038/s41598-021-02868-x.

Our news editors report that more information may be obtained by contacting Juan I. Soto, **Bureau of Economic Geology**, Jackson School of Geosciences, University of Texas at Austin. Additional authors for this research include Mahdi Heidari, Michael R. Hudec.

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