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Energy - Energy Geoscience; University of Texas Austin Researchers Target Energy Geoscience (Impact of salt dome morphology on geological storage volumetric estimations: Implications for prospect-scale assessment)

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2025 DEC 12 (VerticalNews) -- By a News Reporter-Staff News Editor at Energy Weekly News -- A new study on energy geoscience is now available. According to news reporting originating from Austin, Texas, by VerticalNews correspondents, research stated, "Geological storage in salt caverns plays a critical role in managing energy resources, yet regional assessments often fall short in accounting for specific salt dome morphological variations that can significantly influence cavern engineering and storage capacity."

Financial supporters for this research include University of Texas At Austin; The University of Texas At Austin **Bureau of Economic Geology**.

The news editors obtained a quote from the research from University of Texas Austin: "To address this gap, we developed a refined approach to modeling salt domes, incorporating primary axis tilt, ellipticity, and conic taper. These geometric modifications are applied to a cylindrical baseline salt dome model to assess the effects on total salt volume, workable salt volume, and cavern storage potential. Case studies of four salt domes from the East Texas Salt Basin-Mount Sylvan, Boggy Creek, Steen, and Hainesville-validate the observed trends from the models. Our findings reveal that positive cone taper and primary axis tilt configurations enhance storage potential, leading to significant increases in potential cavern volume, while ellipticity and negative cone taper result in reduced storage capacities. The study underscores the importance of refining volumetric assessments by accounting for detailed morphologic variations, providing a more accurate framework for site-specific geological storage evaluations. Additionally, we discuss challenges related to intra-salt heterogeneities, including intra-salt deformation and mineralogical impurities, highlighting the need for improved site characterization to optimize the safety and efficiency of subsurface storage systems."

According to the news editors, the research concluded: "This work contributes to the development of scalable and reliable geological storage infrastructure, essential for meeting future energy demands."

For more information on this research see: Impact of salt dome morphology on geological storage volumetric estimations: Implications for prospect-scale assessment. Energy Geoscience, 2025,6(4):100443. The publisher for Energy Geoscience is KeAi Communications Co., Ltd.

A free version of this journal article is available at https://doi.org/10.1016/j.engeos.2025.100443.

Our news journalists report that additional information may be obtained by contacting C. Nur Schuba, **Bureau of Economic Geology**, Jackson School of Geosciences, University of Texas Austin, Austin, TX, United States. Additional authors for this research include Lorena G. Moscardelli, Jonathan P. Schuba.

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

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