
Geofluids; Data on Geofluids Discussed by Researchers at University of Texas Austin (Fracture, Dissolution, and Cementation Events in Ordovician Carbonate Reservoirs, Tarim Basin, NW China)

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2020 MAY 15 (NewsRx) -- By a News Reporter-Staff News Editor at Science Letter -- Data detailed on geofluids have been presented. According to news reporting originating from the University of Texas Austin by NewsRx correspondents, research stated, "Ordovician carbonate rocks of the Yijianfang Formation in the Tabei Uplift, Tarim Basin, contain deeply buried (>6000 m), highly productive oil and gas reservoirs associated with large cavities (>10 m). Previous workers inferred that large cavities are paleocaves (paleokarst) formed near the surface and subsequently buried."

Funders for this research include U.S. Department of Energy.

The news reporters obtained a quote from the research from University of Texas Austin: "Alternately, caves may have formed by dissolution at depth along faults. Using 227 samples from 16 cores, we document textures and cement compositions bearing on cavity histories with petrographic, high-resolution scanning electron microscopy (SEM), isotopic, and fluid inclusion microthermometric observations. Results show that dissolution occurred at depth and was caused by (1) acidic fluids derived from Middle-Late Silurian and/or Devonian-Permian hydrocarbon generation and maturation, (2) high-temperature fluids, of which some were associated with Late Permian igneous activity, and (3) Mg-rich fluids that accompanied Jurassic-Cretaceous deformation and the formation of partially open fractures and stylobreccias (fault breccias). The relative paragenetic sequence of the structure-related diagenesis suggests seven stages of fracturing, dissolution, and cementation. Mottle fabrics in the Yijianfang Formation contain argillaceous carbonate-rich silt and are bioturbation features formed within the marine environment. Those mottled fabrics differ from clearly karstic features in the overlying Lianglitage Formation, which formed by near-surface dissolution and subsequent infilling of cavities by allochthonous sediment. Mottle fabrics are crosscut by compacted fractures filled with phreatic-vadose marine cements and followed by subsequent generations of cement-filled fractures and vugs indicating that some fractures and vugs became cement filled prior to later dissolution events."

According to the news editors, the research concluded: "Calcite cements in fractures and vugs show progressively depleted values of d_{18O} documenting cement precipitation within the shallow (~220 m), intermediate (~625 m), and deep (~2000 m) diagenetic environments. Deep (mesogenetic) dissolution associated with fractures is therefore the principal source of the high porosity-permeability in the reservoir, consistent with other pieces of evidence for cavities localized near faults."

For more information on this research see: Fracture, Dissolution, and Cementation Events in Ordovician Carbonate Reservoirs, Tarim Basin, NW China. *Geofluids*, 2020,2020. (*Geofluids* - <https://www.hindawi.com/journals/Geofluids/>). The publisher for *Geofluids* is Hindawi-Wiley.

A free version of this journal article is available at <https://doi.org/10.1155/2020/9037429>.

Our news journalists report that more information may be obtained by contacting Vinyet Baques, **Bureau of Economic Geology**, Jackson School of Geosciences, University of Texas Austin, University Station Box X Austin, TX 78713-8924, USA. Additional authors for this research include Estibalitz Ukar, Stephen E. Laubach, Stephanie R. Forstner, Andras Fall.

Keywords for this news article include: University of Texas Austin, Asia, China, Anions, Alkalies, Geofluids, Carbonates, Carbonic Acid.

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