Geology - Sedimentary Geology; Study Data from University of Texas Austin Provide New Insights into Sedimentary Geology (Characteristics of a Campanian Delta Deposit Controlled By Alternating River Floods and Tides: the Loyd Sandstone, Rangely Anticline, Colorado, Usa)

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2020 MAR 6 (NewsRx) -- By a News Reporter-Staff News Editor at Science Letter -- Research findings on Geology - Sedimentary Geology are discussed in a new report. According to news reporting from Austin, Texas, by NewsRx journalists, research stated, "The Campanian Loyd Sandstone Member of the Mancos Shale (Loyd) along the Rangely Anticline, Piceance Basin, Colorado, contains a series of multi-meter-thick, heterolithic, coarsening-upward successions (CI:Ss) with internal clinoforms comprising low-angle-dipping (<5 degrees), parallel-laminated sandstone beds interbedded with bioturbated flaser-wavy-lenticular bedded sandstone and siltstone. Loyd clinoforms are delta foresets composed of prodelta and delta-front deposits, including mouthbars."

Funders for this research include Quantitative Clastics Laboratory at the Bureau of Economic Geology, Jackson School of Geosciences, UT Austin, American Association of Petroleum Geologists grant, Geological Society of America.

The news correspondents obtained a quote from the research from the University of Texas Austin, "Many CUSs exhibit scours filled with bioturbated sandstone, or interbedded bioturbated sandstone and siltstone or mudstone representing aggradational fill of subaqueous terminal distributary channels or the migration of mouthbars into channel scours. Mud drapes on sedimentary structures and mud rip-up clasts arc extremely common. A high-abundance, high-diversity, trace-fossil assemblage includes vertical, 1-4-m-deep Ophiomorpha that may penetrate multiple bedsets of parallel-laminated sandstones and highly bioturbated finer-grained interbeds. Bioturbation increases sandstone content in finer-grained interbeds, and provides sandy conduits that increase connectivity between beds. Although parallel-laminated sandstones volumetrically dominate Loyd delta clinoforms, they likely represent relatively short-term freshwater and sediment input during river flooding that produced delta-front turbidity currents. Interbedded finer-grained beds, mud-draped sedimentary structures, and the high-abundance, high diversity trace-fossil assemblages record longer amounts of time during reduced fluvial discharge, tidal reworking of sediments, and intense bioturbation under marine salinities. Controls on the internal characteristics of the Loyd delta deposits include: 1) a high sediment influx into a relatively shallow marine basin protected from wave action during normal regression; 2) relatively short-duration, episodic freshwater and sediment discharge from distributaries that reduced salinities, deposited sand as turbidity currents, and promoted delta-front channelization; and 3) longer-duration periods of reduced discharge with deposition of finer-grained sediment, tidal reworking, and bioturbation of sediments under higher salinities."

According to the news reporters, the research concluded: "These controls combined to produce the heterolithic, highly bioturbated, river-flood delivered, and tidally modified clinoforms of the Loyd that differ from deposits typically considered to be classic examples of fluvial-flood-dominated or extensively tidally modified deltas."

For more information on this research see: Characteristics of a Campanian Delta Deposit Controlled By Alternating River Floods and Tides: the Loyd Sandstone, Rangely Anticline, Colorado, Usa. Journal of Sedimentary Research, 2019;89(12):1181-1206. Journal of Sedimentary Research can be contacted at: Sepm-Soc Sedimentary Geology, 6128 East 38TH St, Ste 308, Tulsa, OK 74135-5814, USA.

Our news journalists report that additional information may be obtained by contacting P.P. Flaig, University of Texas Austin, Jackson School of Geosciences, Bur Econ Geol, 10100 Burnet Rd, Austin, TX 78758, United States. Additional authors for this research include S.T. Hasiotis, T.J. Prather and D. Burton.

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