

# **FACTORS IMPACTING ORGANIC MATTER PRESERVATION IN EPEIRIC SEAS: INSIGHTS FROM THE MISSISSIPPIAN LIMESTONE**

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## **ABSTRACT**

Numerous studies have focused on paleoenvironmental reconstruction of depositional conditions of siliciclastic rocks which host hydrocarbons. Much less attention has been paid to hydrocarbon-bearing carbonate rocks, especially those carbonates interpreted to have been deposited in environmental settings for which there are no true modern analogues, such as epeiric sea carbonate deposits. We plan to investigate organic matter production, preservation and provenance in an ancient epeiric sea by studying a set of 3 cores from the Mississippian Limestone of Oklahoma using a multi-proxy approach. Our proxy toolkit includes metal geochemical proxies, stable isotope ratio measurements and biomarker analysis which will allow evaluation of the depositional water column redox conditions, detrital input to the water column and organic matter production. We hypothesize that the Mississippian Limestone was deposited under anoxic water column conditions with very little detrital input. We also hypothesize that the preserved organic matter in the Mississippian Limestone was locally sourced and is of marine origin and the organic matter is a result of local water column productivity.

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