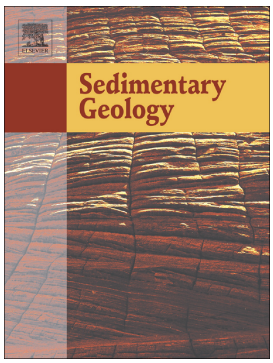

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Paleogeographic and Paleo-oceanographic Influences on Carbon Isotope Signatures: Implications for Global and Regional Correlation, Middle-Upper Jurassic of Saudi Arabia

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Abstract

Carbon isotope data ($\delta^{13}C$) can provide an essential means for refining paleogeographic and paleo-oceanographic reconstructions, and interpreting stratigraphic architecture within complex carbonate strata. Although the primary controls on global $\delta^{13}C$ signatures of marine carbonates are well understood, understanding their latitudinal and regional variability is poor. To better constrain the nature and applications of $\delta^{13}C$ stratigraphy, this study: 1) presents a new high-resolution $\delta^{13}C$ stratigraphic curve from Middle to Upper Jurassic carbonates in the upper Tuwaiq Mountain, Hanifa, and lower Jubaila formations in central Saudi Arabia; 2) explores their latitudinal and regional variability; and 3) discusses their implications for stratigraphic correlations.

Analysis of $\delta^{13}C$ data identified six mappable units with distinct $\delta^{13}C$ signatures (units 1–6) between up-dip and down-dip sections, and one unit (unit 7) that occurs only in the down-dip section of the study succession. $\delta^{13}C$ data from the upper Tuwaiq