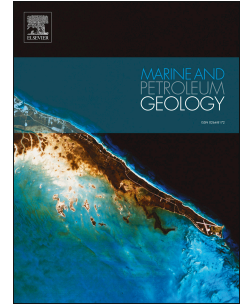


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Factors controlling reservoir properties and hydrocarbon accumulation of the Eocene lacustrine beach-bar sandstones in the Dongying Depression, Bohai Bay Basin, China

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Abstract: Lacustrine beach-bar sandstone reservoirs are economical important exploration targets in the Dongying Depression, Bohai Bay Basin. The factors that controls reservoir quality and hydrocarbon accumulation in lacustrine beach-bar sandstones were systematically investigated through an integrated petrographic, petrophysical, and diagenesis analysis. The reservoir properties of the beach-bar sandstones are mainly affected by compaction, carbonate cementation and dissolution. Significant negative relationships exist between both the porosity and permeability and the volume of carbonate cement. Carbonate cement is mainly distributed along the sandstone-mudstone contacts. Sandstones with thicknesses less than 1 m are generally tightly cemented to form zones with low petrophysical properties. The material source of the carbonate cement in the tightly cemented zone was highly likely from the interbedded mudstone. Content of carbonate cements in the center of the thick sandstones is low, whereas compaction is the dominant diagenetic process, with some dissolution. There is a positive correlation between the petrophysical properties of the beach-bar sandstones and the content of kaolinite. The petrophysical properties have an inverse correlation with the contents of illite and illite-smectite mixed-layer

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