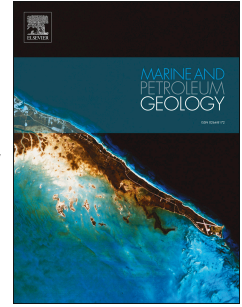


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Sedimentology and Mechanism of a Lacustrine Syn-rift Fan Delta System: a Case Study of the Paleogene Gaobei Slope Belt, Bohai Bay Basin, China

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Abstract

Fan delta systems have long been studied as a kind of good hydrocarbon reservoirs. Although many models have been raised according to their local conditions, there still exists some controversies regarding the formations of the ones developed in continental syn-rift settings. Taking Paleogene Es₃²⁺³ of Gaobei Slope Belt as an example, this paper conducted a comprehensive geological study and a forward depositional modeling. The results show that the sediment within the study area came mainly from the northeastern Baigezhuang uplift and the northwestern Xinanzhuang uplift over a short distance. The sedimentary system is characterized by subaerial debris flow, subaerial braided channels, subaqueous distributary channels, front sand bars and front sand sheets. Furthermore, the study area is a balance-filled basin that experienced a 3rd order normal regression followed by a transgression during the development of the study interval. The results also show that, a stable subsidence rate with small-magnitude climate changes would be a plausible explain for the entire sequence of the fan delta system in the study area. The tectonic subsidence was indeed the dominant driving force to a continental syn-rift fan delta system, although the climate, sediment supply or lake level might bring some lower order (e.g., 4th and

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