

NON-MARINE OIL IN OFF-SHORE BASINS: COMPARISON BETWEEN CHINA AND BRASIL

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Aside from the Jurassic-Cretaceous Songliao Basin, Paleogene is the main stage of hydrocarbon accumulation in China. Lacustrine source rocks in Paleogene basins, both onshore and offshore, provide most of oil for the country. The optimal stage for hydrocarbon formation is ascribed to the co-occurrence of specific tectonic and climatic conditions: The continental rifting has given rise to groups of deep-water large lacustrine basins on the place of the modern Bohai Gulf and the South China Sea, and the worldwide warm climate, particularly in the Eocene. Such optimal conditions occurred in the Brazilian continental margin much earlier. A series of lacustrine basins originated from separation of the African and South American plates in late Mesozoic, again a worldwide warm time interval. Two types of Paleogene oil-generating lakes have been recognized in China: tropical fresh-water lakes (e.g., basins of the Bohai Gulf area) and subtropical saline lakes(those in the South China Sea). The high productivity of the first-type lakes maintained by the enhanced solar radiation at the low-latitudes and warm-humid climate, and the low oxygen content of the bottom water was caused by thermal stratification in the deep-water basins. For lakes of the second type, the higher salinity and enriched nutrients supported high productivity, while the low-oxygen conditions at the bottom was related to chemical stratification of the water column. The differences between the two types of paleo-lakes are indicated by micropaleontological, lithological, geochemical and isotopical features. Similarly, fresh- and saline-water lacustrine basins have been recognized in the Brazilian oil-bearing basins. A comparison of the Chinese and Brazilian lacustrine basins improves our understanding of the origin and distribution of non-marine source rocks.