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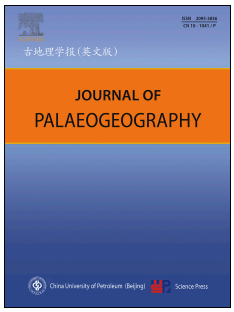

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Palaeogeography and mineral resources

The distribution, hydrocarbon potential, and development of the Lower Cretaceous black shales in coastal southeastern China

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Abstract Lower Cretaceous black shales in coastal southeastern China are of significance to the geological study of the Tethys and Pacific realms and to hydrocarbon exploration of southeastern China and East China Sea. However, the stratigraphic correlation, distribution patterns and hydrocarbon potential of the black shales have not been well constrained so far. In this study, the zircon U–Pb ages, organic petrologic and geochemical analyses were performed for representative outcrop sections in the region. Zircon U–Pb ages demonstrate that the Lower Cretaceous black shales in coastal southeastern China can be divided into two regional-scale sets. The first set was deposited during the early stage of the Early Cretaceous (K_1^1, Berriasian–Hauterivian). The second set was deposited during the late stage of the Early Cretaceous (K_1^2), and might extend to the Taiwan Strait. Detailed organic geochemical analyses including organic matter abundance, type and maturity of the Lower Cretaceous black shales demonstrate that the organic matter abundance of the sources reached medium to good quality by the hydrocarbon source rock standards, and the average TOC values and the chloroform bitumen “A” of the K_1^1 black shales are higher. The type of organic matter is mainly type III, type II can also be found of the K_1^2 black shales. The thermal maturity of most samples is high to overmature. A relatively comprehensive hydrocarbon resource evaluation indicates

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