

A study of distribution and sources of organic matter of marine core sediments from north of South China Sea

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Multi-biomarker indexes and total organic carbon (TOC), total nitrogen (TN) were analyzed for two sediment cores from eastern coastal area of Beibu Gulf (core 45, 0-90cm) and Qiongzhou Strait (core 29, 0-90cm), South China Sea. Total n-alkane concentrations varied from 0.37 to 3.57 ug/g. The TOC/TN ratios, CPI values and regular sterane composition indicated mixed marine and terrestrial sources of sedimentary organic matter. Generally, sediment samples from core 29 located at Qiongzhou Strait have higher terrigenous/aquatic alkane ratio. The ratio of Pr/C₁₇ and Ph/C₁₈ indicate that the sediment from the two cores have not been undergone significant biodegradation. The low Pr/Ph ratios (<0.7) in two core sediments indicate an anoxic sedimentary environment.

The parameters of hopanes and steranes indicated the presence of petroleum input across the whole section in the two sediment cores. Except for the potential anthropogenic petroleum pollution input to the upper layers, the sub-marine hydrocarbon seepage is the reasonable explanation for the petroleum input to the deep sediment. High ratio of C₂₃ tricyclic terpane/hopane (C₂₃TT/H), low 4-methyl steranes/C₂₉aaa steranes, low oleanane parameter (OP) shows no correlation between the organic matter in the studied core sediments and the Liushagang Formation, the probably hydrocarbon source rock for all the discovered oils in Beibuwan Basin. The coexistence of pregnane and diasteranes in the sediment samples are interpreted to be a mixture of oil sources. Further study is needed to identify the specific oil sources.