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Astronomical tuning and magnetostratigraphy of Neogene biogenic reefs in Xisha Islands, South China Sea

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Abstract

Biogenic reefs are one of two major depositional types in the South China Sea, and are constructed by coral, algae and bryozoa. The West Pacific is a major area of biogenic reef development and plays a critical role in the global carbon cycle. However, the lack of geochronological studies in previous works inhibits our understanding of their contributions. Herein, we conduct a cyclostratigraphic and magnetostratigraphic study on Neogene biogenic reefs using the XK–1 core that was drilled at the Shidao Island, Xisha (Paracel) Islands. The main findings of this study are: (1) the establishment of reliable magentostratigraphy for Ledong, Huangliu, Meishan and Sanya Formations; (2) the magnetic susceptibility variation can be inferred as growth index and tuned to the 405–ka long eccentricity cycle; (3) the astronomical geochronology suggests that the bottom ages for Ledong, Yinggehai, Huangliu,