Deformation feature of the Indochina Peninsula: paleomagnetism of the Lower-Middle Jurassic red beds from the eastern Khorat Basin

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Paleomagnetic investigation was carried out for the Lower-Middle Jurassic Tholam formation in the eastern margin of the Khorat Basin in order to understand deformation feature of Indochina Peninsula due to the collision of India. We collected 300 samples in 30 sites from red bed around M.Phin (16.4^{o}N,105.8^{o}E) in the southern Lao PDR. Stepwise thermal demagnetization revealed two components behavior. Low-temperature component (LTC) with unblocking temperature less than 300^{o}C were isolated at 12 in 30 sites. The LTC directions are parallel to the geocenteric axial dipole field direction and show negative fold tests, indicating as recent overprint. High-temperature component (HTC) with unblocking temperature 650-680^{o}C were isolated at 17 in 30sites. Applying stepwise unfolding, formation-mean direction of the HTC from 17 sites gave a maximum grouping at 46% unfolding. The DC tilt test also reveals the synfolding origin of the HTC. We conclude the HTC from17 sites at 46% unfolding (D=30.9^o, I=38.1^o, k=164.9, with alpha 95=2.8^o) as the characteristic paleomagnetic direction at M.Phin, which is corresponding to a paleopole at 60.4^{o}N, 181.6^{o}E, K=156.7 with A95=2.5^o. This pole is consistent with those of Mesozoic red beds of the western margin of Khorat Basin, indicating that no relative tectonic motion occurred within the Khorat Basin. This pole is also consistent with those of Mesozoic red beds of coherent part of the Shan-Thai Block, whereas shows clockwise rotation with respect to the Cretaceous pole from the southernmost part of the Indochina Block and the Jurassic to Eocene poles from the stable South China Block. We conclude that the Khorat Basin was rotated more than 15^o as a unit block with respect to the South China Block, together with the coherent part of the Shan-Thai Block.