

Tectonic deformation of around the Shan-Thai Block inferred from paleomagnetism

Yo-ichiro Otofujii[1]; Masahiko Yokoyama[2]; Heider Zaman[3]; Yu Yan Liu[4]

[1] Earth and planetary Sci., Kobe Univ.; [2] Kobe Univ.; [3] Sci.,Kobe Univ.; [4] China Univ. of Geosci.

Early to Middle Cretaceous red sandstones were sampled at four localities in the Lanpin-Simao fold belt of the Shan-Thai Block to describe its regional deformational features. Most of the samples revealed a characteristic remanent magnetization with unblocking temperatures around 680°C. Primary natures of magnetization are ascertained through positive fold test. A tilt-corrected formation-mean direction for the Jingdong (24.5°N, 100.8°E) locality, which is located at a distance of 25 km from the Ailaoshan-Red River Fault, revealed northerly declination with steep inclination (Dec/Inc = 8.3°/48.8°, $a_{95} = 7.7^\circ$, N = 13). However, mean directions obtained from the Zhengyuan (24.0°N, 101.1°E), West Zhengyuan (24.0°N, 101.1°E) and South Mengla (21.4°N, 101.6°E) localities indicate an easterly deflection in declination; such as Dec/Inc = 61.8°/46.1°, $a_{95} = 8.1^\circ$ (N = 7), Dec/Inc = 324.2°/-49.4°, $a_{95} = 6.4^\circ$ (N = 4) and Dec/Inc = 51.2°/46.4°, $a_{95} = 5.6^\circ$ (N=13), respectively. Highly reliable Cretaceous paleomagnetic directions obtained from these four localities are incorporated into a paleomagnetic data base for the Shan-Thai Block. When combined with geological, geochronological and GPS data, the processes of deformation in the Shan-Thai Block is described as follows: Subsequent to its rigid block clockwise rotation of about 20° in the early stage of India-Asia collision, the Shan-Thai Block experienced a coherent but southward displacement along the Red-River fault prior to 32 Ma. This block was then subjected to a north-south compressive stresses during the 32Ma-27Ma period, which played a key role in shaping the structure of Chongshan-Lancang-Chiang Mai Belt. Following this some local clockwise rotational motion has occurred during the Pliocene-Quaternary time in central part of the Shan-Thai Block as a result of internal block movements along the reactivated network of faults.