

南中国地塊南部の変形現象：南寧に分布する前期白亜紀の赤色砂岩の古地磁気

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Paleomagnetic study of the Early Cretaceous Xinlong Formation from Nanning

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In order to examine tectonic deformation in the southern part of the South China Block (SCB), red bed samples have been collected at 37 sites from the Early Cretaceous Xinlong Formation, south of the Nanning area (108.3E, 22.8N). Stepwise thermal demagnetization and rock magnetic investigations revealed magnetite and hematite as carriers of remanent magnetizations in the studied samples. A pre-folding origin for hematite-related magnetization is supported by a positive fold test, whereas a syn-folding origin is assigned to a magnetic component carried by magnetite. The 100% tilt-corrected mean direction of the hematite-related component (Dec/Inc = 3.3/41.7, $k=43.3$, $a95 = 4.1$, $N=29$) is considered to have been acquired during the Early Cretaceous deposition. The syn-folding magnetite-held remanence is Dec/Inc = 1.5/44.1, $k=72.6$, $a95 = 3.0$, $N=33$ [after 54% unfolding]. The magnetite grains are interpreted to have rotated in the sediments until the commencement of folding long after the hematite grains ceased their motion. Comparison of the hematite-related paleomagnetic directions with previously reported Cretaceous paleomagnetic results from the Huanan Block (a part of South China Block) reveal up to 13.4 ± 4.7 counter-clockwise deflection in the western part compared to its central part. Geological and seismic tomographic observations suggest that large degree of counter-clockwise deflection remained restricted to Nanpanjiang-Youjiang Basin, where low-seismic velocities of both P and S waves prevail. This deflection in declination can fairly be ascribed to counter-clockwise rotational deformation of weak continental lithosphere under the South China Block during the indentation of India in to Asia. The presence of lateral heterogeneity in crustal strength beneath the South China Block is required to accommodate the phenomenon of tectonic rotation.