Further paleomagnetic constraints on the extent of the stable body of the South China Block since the Cretaceous

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Previous paleomagnetic studies have demonstrated that a large part of South China Block (SCB), southeastern Asia, has behaved as its stable body since the Cretaceous. We undertook a paleomagnetic investigation of early Cretaceous red sandstones at 24 sites within the Ganzhou and Xingguo Basins in southern Jiangxi, the eastern part of SCB, China. The aim of this study is to further constrain the extent of the SCB that has been stable since the Cretaceous. We isolated the characteristic directions of higher temperature components (HTCs) with an unblocking temperature from 650 to 700 degree C by progressive thermal demagnetization and principal component analysis, and determined mean HTC directions of 23 sites (except for site 20, showing no significant component). Rock magnetic investigations show that hematite is the main magnetic carrier of the specimens. The optimal concentration of global mean HTC directions calculated using the direction-correction tilt test is achieved at 51.2 +/- 32.4 % untilting, indicating syntilting magnetization. This observation suggests that their remanences were not acquired immediately after sedimentation. Most sedimentary basins on the eastern side of the SCB were controlled by fault movement (extensional basin). Most tilting (folding) in such a tectonic basin is thought to have progressed contemporaneously with the structural and stratigraphic development of the basins. We concluded that the remanence acquisition of redbeds on the Ganzhou and Xingguo Basins occurred during the synsedimentary tilting. We adopted 51.2 % untilted directions of the HTCs as the paleomagnetic field directions during early Cretaceous. The mean paleomagnetic pole (latitude = 76.3N, longitude = 224.3E, A95 = 3.3) calculated using virtual geomagnetic poles from 23 sites is in agreement with previously reported Cretaceous paleomagnetic poles from the stable part of SCB. This indicates that the Jiangxi region has been a part of the stable body of the SCB since the Cretaceous and that the tectonic influence of the India-Asia collision did not extend to the interior part of the stable body of the SCB. The reference Cretaceous pole position (latitude = 79.3N, longitude = 209.6E, A95 = 2.5) calculated using 10 Cretaceous poles from the stable body of the SCB is similar to those determined from stable Eurasia and the North China Block (NCB). This result indicates that the India-Asia collision caused no relative motion, as detected by paleomagnetic analysis, among stable Eurasia, NCB, and the stable body of the SCB.