Late Cretaceous disturbance in the eastern Sino-Korean Block

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Based on careful rockmagnetic, paleomagnetic, and petrographic studies, muticomponent magnetization, observed from the Cretaceous rocks in Korean Peninsula, are clarified as primary magnetization by passages of unfolding (at 99 per cent), conglomerate, and contact tests. Detail analysis of known reliable Late Jurassic to Late Cretaceous paleomagnetic data and geological evidences clearly support the hypothesis that tectonic frames of the NCB/YZB (i.e. SCB) should extend to Korea and probably to SW Japan.

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Paleomagnetic samples of the Early Cretaceous, avoiding intruded or extruded rocks, were collected from 29 sites in the Korean Peninsula. Careful rockmagnetic, paleomagnetic, and petrographic studies reveal two component characteristic magnetizations of magnetite (Cm) and haematite (Ch) as primary, and both components (Ds = 30.5 degrees; Is = 56.5 degrees) show a very highly concentration between sites (alpha95 = 1.9 degrees) and pass the unfolding test at 99 per cent confidence level (k2/k1 =4.18; n = 20). Detail analysis of known reliable Late Jurassic to Late Cretaceous paleomagnetic data and geological evidences clearly support the hypothesis that tectonic frames of the NCB/YZB (i.e. SCB) should extend to Korea and probably to SW Japan.

The obtained mean direction for the characteristic magnetization of the Early Cretaceous yields a paleopole, located at 205.1E, 65.4N (dp = 2.0 degrees, dm = 2.8 degrees), indicating a meaningful clockwise local rotation (about 11 degrees +/- 6 degrees) of the eastern SKB with respect to the western SKB. Such regional rotation with vertical could drive a significant disturbance in this area. N-S compression caused by collision and crustal shortening could be drive a significant disturbance in this area such as sinistral strike-slip motion of the faults, brittle to semi-ductile deformation, creation of the strike-slip basins and volcanic activities. The age cumulation data for volcanic rocks imply that the disturbance occurred between 100 and 60 Ma (with a peak timing of 80 Ma) in the Korean Peninsula, which differs from the syn-collisional event (around 120 Ma) in the SKB. This event is only observed in the eastern SKB. The mechanism of this event can be involved in the complicate amalgamations of the various blocks. We propose calling it the Far East Asian Disturbance.