## New Ordovician Paleomagnetic Results from the South China Block and their Implications for the Paleogeographic Position of Gondwana

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The relationship between the South China Block (SCB) and Gondwana has long been a subject of debate. A popular view is that most east and southeast Asian continental blocks, including Tarim, Qaidam, North China and SCB, Qiangtang, Indochina and other terranes farther south, had their origins on the northern margin of Gondwana. They rifted from Gondwana and drifted northward, and finally accreted successively to the Eurasia continent. However, others questioned whether the SCB was ever a tectonic coherent part of Gondwana supercontinent. A reconstruction in which the SCB was placed along the India-Australia region of Gondwana margin has been proposed and tested by the best using the published Paleozoic paleomagnetic data [1]. Under this reconstruction, five high quality paleopoles from the SCB between the Early Cambrian and late Early Devonian are in good agreement with coeval paleopoles from Gondwana. The best fitted segments of the APWPs were the ones for 540-510 Ma and 420-400Ma, but the Ordovician data were not in good agreement. After ~400Ma, the apparent polar wander paths for the SCB and Gondwana diverge markedly. This indicates that the SCB had been part of Gondwana and the connection was intact from at least Early Cambrian until late Early Devonian, but they began to separate by late Middle Devonian (~375Ma).

The published Ordovician paleomagnetic data for the SCB are highly controversial and could be benefit more concrete field tests and better stratigraphic constraints. Our new sampling was carried out from the Baota Formation in the southmost part of Shanxi Province, northwestern SCB. The strata are correlated to the Sandbian - Katian, Late Ordovician. Samples are of purple mud-limestone. Magnetic carriers are magnetite and hematite. After removing a recent field remagnetization component, the stable hard component (declination/inclination = 106.4/-59.6, k = 66.0,  $\alpha 95 = 1.9$ ) has the dual polarities and can pass a fold test. It is interpreted as primary. The calculated paleopole is at  $(32^{\circ}S, 227^{\circ}E; dp/dm = 2.1/2.9)$ . This pole position is consistent with the one that was obtained from the Hongshiya Formation (Fang et al, 1990), which is correlated to Dapingian - Darriwilian, Middle Ordovician, in Yunnan Province. We thus average them to represent the geomagnetic field in the time  $\sim 470 - 445$  Ma of the SCB. If the SCB were ever part of Gondwana from Cambrian to ~400Ma as mentioned above, this new Ordovician pole is also useful to discuss the paleogeographic position of Gondwana. Rotating the SCB to NW Africa by 34° clockwise about a pole at (37°N, 331°E) can make the best APWP fitting between SCB and Gondwana [1], this new Ordovician pole from the SCB will fall at the center of Africa, ~30° apart from the mean

Ordovician poles of Gondwana in the NW Africa coordinates (e.g. McElhinny et al, 2003) [3]. Our new results mean that the Gondwana continent plate might move significantly during the Middle and Late Ordovician.

Keywords: paleomagnetism; Ordovician; South China Block; Gondwana; paleogeography

## References

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