Paper 12

Paleomagnetic evidence to define a stable East Asia and Sundaland

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Tertiary paleomagnetic data and marine magnetic anomaly data from east and southeast Asia define two broad regions: 1) (Region 1) a stable continental region composed of east Asia, Indonesia, and the continental portions of Sundaland; and 2) (Region 2) the various island arcs, continental fragments and oceanic basins that occur to the southeast of the continental block.

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Although the data is still fragmentary, we find that most Tertiary paleomagnetic directions from Region 1 do not show significant rotations from the expected dipole direction. Exceptions to this are found in central and western Thailand, Sumatra, and southeastern Korea where the anomalous directions are related to motions along major strike-slip faults which locally cut Region 1. In contrast, reported paleomagnetic directions from Region 2 are recorded for the Philippines, Sulawesi, eastern Indonesia arc and portions of Borneo. Here the rotations observed are related to local tectonic events which have occurred during the Tertiary. In this region we find examples of paleomagnetic rotations caused by accretion, collision related bending, strike-slip faults, and small plate or microplate rotations. With the exception of the mounting reliable data from east Asia, pre-Tertiary paleomagnetic data from the other portions of Region 1 and from Region 2, are somewhat limited and of questionable reliability. Furthermore, because of the limited amount of pre-Tertiary structural data and reliable geologic mapping that exist for Indochina, "Sundaland" and the pre-Tertiary portions of the Philippines and eastern Indonesia, the use of pre-Cenozoic paleomagnetic data for large scale tectonic synthesis of this region such be regarded as suspect.