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The Africa-Adria Apparent Polar Wander Path and its implications for Pangea paleogeography

Giovanni Muttoni
University of Milan, Earth Sciences, Milan, Italy (giovanni.muttoni1@unimi.it)

Paleomagnetic data of Permian-Cenozoic age from para-autochthonous regions of Adria – the African promontory – are reviewed together with coeval paleomagnetic data from Africa. A total of 75 paleomagnetic pole entries from Africa and Adria have been selected from igneous units or sedimentary units that have been corrected for inclination shallowing. All selected paleopole entries meet fundamental quality criteria such as (1) they use magnetic component directions that have been isolated using appropriate demagnetization techiques, (2) they bear no suspicion of remagnetization, and (3) they are well dated by means of radiometric age techniques or biostratigraphy. As a main outcome, this review shows that paleomagnetic poles from para-autochthonous Adria are statistically undistinguishable (or hardly so) relative to coeval poles from Africa over the extended time span considered in this analysis, i.e. from the Early Permian to the Miocene. This substantial tectonic coherence between Africa and Adria allows the construction of a composite Africa-Adria apparent polar wander path (APWP) that can be used to bolster the Gondwana APWP in the poorly known Permian–Triassic time interval of evolution of Pangea. The Early Permian paleopole of Africa-Adria from radiometrically dated igneous rocks, in conjunction with the coeval Laurasia paleopole again from igneous rocks, support Pangea B. The Late Permian/Early Triassic paleopoles from Africa-Adria and Laurasia support Pangea A, which persisted up to fragmentation in the Jurassic. A final review of the geologic and paleomagnetic evidence in support of a Middle Permian intra-Pangea dextral megashear system will be attempted.