Paleomagnetic survey of Late Permian series in Morocco: implications for Pangea reconstruction and GAD Hypothesis.

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The configuration of Pangea is one of the strongest debates on recent times large scale reconstructions. Various conflicting configurations have been proposed, and discussed using a large amount of suggestion including misleading ages, remagnetizations, unsufficient demagnetization process, error in magnetization recording for sediments, odd Earth magnetic field during certain periods, etc... Recent paleovertebrates d ata indicates that the basal part of the Argana formation (Morocco) is Tatarian (Upper Permian), this serie being thus one of the most well dated clastic serie of Africa. A new paleomagnetic surve y allowed us to sample 15 sites (90 samples). The sites directions are well grouped after tilt correction and the mean direction is deduced, using Fisher's statistic, as Ds = 313.4 , Is = 8.5 , K = 50.9, A95 = 5.6. A fold test is positive at 95%, and so is the inversion test. These results suggest that the HT component is effectively a primary direction. The presence of mixed polarities, suggests that T1 and T2 formations post date the Kiaman period , the end of which is estimated at approximately 265Ma.A comparison of these data with 38 available worldwide paleomagnetic data suggests a A Pangea configuration.(roughly the Atlantic pre- opening configuration). We discuss the occurrence of lithospheric deformation inducing important rotations at various scale, particularly in future rifts or mountain zones (Colorado, South of France, South American cordilleras, east of Australia etc) or even the quality of fits. Using these rotations, most of worldwide poles can be reconciled using a rough GAD hypothesis during the 250-275 Ma period. Occurrence of Octupole components or flattening are also discussed for the Permo-Triassic period.

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