



## **A New Apparent Polar Wander Path for Africa for the last 100 Ma: Implications for the Origin of the Cameroon Volcanic Line and the Progressive Desertification affecting the Continent.**

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The African palaeomagnetic database has been re-evaluated taking into consideration some minimum reliability criteria to construct a new African Apparent Polar Wander Path (APWP) for the last 100 Ma. The path is used to investigate tectonic rotations of Africa and the consequences of such rotations to the evolution of the Cameroon Volcanic Line and the progressive desertification of the continent.

The APWP shows a general anti-clockwise rotation of the African Plate with northward drift since 100 Ma. This northward drift has progressively brought the plate over a proposed Cameroonian hotspot located in the north of Africa since the Jurassic. Traces of this hotspot left behind as the continent passed over it include: a Jurassic volcanism in the Sirte basin of North Africa, deep sedimentary valleys created near Lake Chad between 100 - 80 Ma, formation of highlands in the Lake Chad Basin in the Middle Cenozoic, initiation of volcanism in the Mandara Mountains of north Cameroon in the Early Oligocene, and the Ndu-Oku areas in the middle Oligocene, and a progressive south-westward initiation of volcanism in the other centres of the Cameroon Volcanic Line (Kumbo 28 Ma; Bamenda Highlands 23 Ma; Bambouto 17.6 Ma; Manengouba 11 Ma; and Mt. Cameroon, Recent). The agreement between the geological record and the latitudinal drift of the African continent shown by palaeomagnetic data supports the role of a fixed mantle hotspot as the cause of the Cameroon Volcanic Line.

Using the same mean palaeomagnetic poles, a set of palaeo-equatorial positions have been projected on the present configuration of Africa from which it can be observed that North and West Africa were at the equatorial region for a very long time before 100 Ma. This is consistent with the marine sequences of Tunisia and Arabic evaporites of the Permian and explains the richness in petroleum products for places like Arabia. As the continent drifted northwards, other countries like Libya and Chad were brought progressively under the equatorial climate where they also remained for a long time. The presence of a trans-Saharan sea in this warm equatorial climate resulted in the accumulation of large oil reserves in Libya and Chad. Meanwhile South Africa was at that time under arid climatic conditions. The equatorial climate which was well developed in North Africa has been shifting progressively southwards and the former arid climatic conditions of South Africa is gradually being transformed into more humid conditions.

The palaeomagnetic data and geologic records do in fact indicate that the northwards drift of Africa has been bringing areas that were in arid climatic conditions successively to equatorial climatic conditions and vice versa.

Key words: Africa, Cameroon, Volcanic, Equator, Arid