



## **New African Lower Carboniferous paleomagnetic pole from intrusive rocks of the Algerian Sahara and geodynamical implications**

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A paleomagnetic study has been conducted on magmatic rocks cropping out within horizontal tabular formations of the Saharan craton (Tin Serririne basin, South of Hoggar shield). The isotopic dating of these rocks gives a mean  $^{40}\text{K}/^{40}\text{Ar}$  age of  $347.6 \pm 8.1$  Ma indicating a Tournaisian geological age. The magnetic fabric study shows that these lavas were emplaced as sills and dykes. The paleomagnetic data present three different directions. The paleomagnetic pole from the first one is close to the previous African poles of Permian age. This direction is therefore interpreted as a Permian remagnetization. The second direction, defined by both linear regression and remagnetization circles analysis, is considered as the primary magnetization. It yields a new African Tournaisian paleomagnetic pole ( $\lambda = 18.8^\circ \text{ S}$ ,  $\Phi = 31.2^\circ \text{ E}$ ,  $K = 29$ ,  $A_{95} = 7.5^\circ$ ). The third direction has intermediate orientation between that of the previous directions and of the Upper Cenozoic field. Its corresponding paleomagnetic pole does not coincide with any of the African poles younger than Lower Carboniferous. This component is then a secondary one and is interpreted as related to a composite magnetization.

Our new pole is very close to that of Ben Zireg (Saharan craton; Aïfa et al., 1990) of same age. It also agrees with the mean Upper Devonian – Middle Carboniferous

pole for West Gondwana given in the compilation of Van der Voo (1993). When comparing our new datum with those of the new compilation of the Gondwana Paleozoic poles published by McElhinny et al. (2003), it appears that it is not very far from the Gondwana mean pole for the Lower Carboniferous

To complete the Gondwana APWP proposed by McElhinny et al. (2003), a new curve using its paleomagnetic database but determined by bivariate statistics (Le Goff, 1990; Le Goff et al., 1992) was computed and a new paleogeographic map of Gondwana and Laurussia during the Lower Carboniferous is also presented.