

Late Neoproterozoic Convergence Between the West African Craton and the Pan-African Terranes: Metacratonic Evolution, Post-Collisional Magmatism and Cenozoic Volcanism in the Tuareg Shield and the Anti-Atlas

Jean-Paul Liegeois

Isotope Geology, Royal Museum for Central Africa, B-3080 Tervuren, Belgium

The West African craton (WAC), this huge body stable for 2 billions years, has collided with a series of terranes in West Africa at the end of the Neoproterozoic (Pan-African orogeny). It is generally considered that little occurred in the WAC while the other West African terranes have been modelled during this major collision, forming the Pan-African mobile belt. The contrast is indeed clear but it must be precised: WAC margins have been affected, sometimes as strongly as they have been considered as part of the mobile belt and parts of the mobile belt were sufficiently cratonic to largely preserve their pre-Pan-African features and to strongly influence the development of the Pan-African structures. This metacratonic evolution ("meta" in the sense of what is coming after, in this case the cratonic stage) is marked by an absence of major crustal or lithospheric thickening, by transcurrent tectonics and post-collisional magmatism as major effects and by the preservation of old features and of early orogenic ophiolitic and island arc assemblages accreted early towards these regions.

With their rigid but fractured structure and their position by definition at rheological discontinuities, metacratonic regions are highly susceptible to be repeatedly reactivated. They are thus often the locus of major mineralizations and of intraplate volcanic provinces.

The Tuareg shield, on the eastern side of the WAC and the Anti-Atlas, on its northern side are taken as examples: the Tuareg shield comprises several Archaean/Palaeoproterozoic terranes variably metacratonized during the Pan-African and is the locus of a Cenozoic volcanic province as it is also the case for the Anti-Atlas which is considered here as the northern metacratonic boundary of the WAC itself.