

Structural Eburnean Events in the Massigui Square Degree (southern Mali, northwestern Man Shield, WAC): A review

Ousmane Wane*

Laboratoire de Minéralogie et de Pétrologie, Faculté des Sciences et Techniques, Université des Sciences, des Techniques et des Technologies de Bamako, BP E 3206, Colline de Badalabougou, Bamako, Mali

*E-mail: ousmane.wane@gmail.com

The convergence between the Paleoproterozoic Baoulé-Mossi domain and the Archean Kenema-Man domain induced a tectonic events in the Massigui Square Degree, located in southern Mali.

The Massigui region is covered by the Birimian volcano-sedimentary sequences of the Bagoé Basin which are intruded by multiple Eburnean magmatic intrusions (Wane, 2010). It belongs to the Paleoproterozoic of the northwestern segment of the Man Shield, southern West African Craton (WAC) and is close to the Archean Kenema-Man domain. It is a key area to study the amalgamation of these two domains.

The Massigui Square Degree shows a strong spatial relationship between magmatism, tectonic and sedimentary processes. It is transected by the major NNE-SSW to NE-SW Banifing Shear Zone (BSZ) which links possibly with the Sassandra Fault Zone, separating Paleoproterozoic and Archean domains in Côte d'Ivoire (Liégeois et al., 1991; Pothin, 1993; Caby et al., 2000). The BSZ extends from Côte d'Ivoire to the Taoudeni Basin is at least 100 km long and 5 km wide. This lithospheric scale shear characterized by heterogeneous deformations played a key role in the structural evolution of the Paleoproterozoic rocks of the area.

The synthesis of the various tectonic works carried out on the Massigui region by groups of different authors (Liégeois et al., 1991; Wane et al., 2007; Wane, 2010; Wane et al., 2018) allows to discriminate four contrasted tectonics stages developed before, during and after the main BSZ. The D₁ tectonic phase is poorly constrained and corresponds to a first isoclinal folding. The D₂ tectonic phase, main regional deformation, is transpressive. The sense of shearing is sinistral NNE-SSW to NE-SW based on σ , S/C fabrics and asymmetric fold structures (Wane et al., 2007, 2018). The D₃ tectonic phase, brittle/ductile in character, is highlighted by fracture cleavage, tension gashes, microfaults and vein arrays. Orientation of extensional cracks filled by quartz indicates a dextral movement (Liégeois et al., 1991). The D₄ tectonic phase marked by brittle character affects display directions sub-parallel or oblique to the main NNE-SSW to NE-SW orientation of the BSZ. It is associated with normal to partially transtensive faulting (Wane et al., 2007).

Keywords: Massigui, tectonics, Eburnean, Man Shield, shear zone, Banifing, plutonic rocks, southern Mali, structural, phases, folding

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