

# **Thrust to braiding transpression and transtension tectonics during the Paleoproterozoic evolution of the Birimian Greenstone Belt of Mako, Kédougou-Kéniéba Inlier, Eastern Senegal**

Moussa Dabo<sup>1,2</sup>, Tahar Aïfa<sup>2,\*</sup>, Ibrahima Gassama<sup>1</sup>, Papa Malick Ngom<sup>1</sup>

<sup>1</sup>*Département de Géologie, Faculté des Sciences et Techniques, Université Cheikh Anta Diop de Dakar, BP 5005, Dakar-Fann, Senegal,* <sup>2</sup>*Géosciences Rennes, CNRS UMR 6118, Université de Rennes 1, Bat.15, Campus de Beaulieu, 35042 Rennes Cedex, France*

\*E-mail: tahar.aifa@univ-rennes1.fr

The structural cartography of the Birimian formations of the Mako area shows a polyphase deformation marked by variable structures such as imbricated shear zones, thrusts and reverse-shears, poly-foldings, “boudinages”, normal faults. The multiscale analysis of the various mapped structures combined with the satellite images allowed to distinguish three major phases of Eburnean deformations D<sub>1</sub>, D<sub>2</sub> and D<sub>3</sub>. The D<sub>1</sub> phase is compressive to thrust deformation due to SSE-NNW principal shortening direction which involves large overturned folds verging to the NW associated with minor thrust fault which are preserved in some lithologies (metabasalts, quartzites). The D<sub>2</sub> phase is a sinistral transpressive deformation which comprises an early (D<sub>2a</sub>) stage followed by a late (D<sub>2b</sub>) stage. The early D<sub>2a</sub> stage is characterized by major NE-SW reverse-shears verging to the NW associated with NW-SE minor dextral shear zones. It is followed by D<sub>2b</sub> stage characterized by ENE-WSW shortening direction which creates major NNW-SSE sinistral reverse-shear zones. Interference between NE-SW and NNW-SSE major reverse-shear zone of D<sub>2a</sub> and D<sub>2b</sub> respectively creates an anatomizing pattern of the deformation. Shearing along D<sub>2</sub> shear zone is associated with development of minor extensional zone which filled by varied magmatic products (mafic, intermediate and felsic). D<sub>3</sub> phase is a transtension deformation associated with a dextral movement which creates conjugate normal faults with locally negative flower structures. D<sub>3</sub> principal maximum stress is ENE-WSW oriented. The orientation of the main shortening direction of Eburnean phases D<sub>1</sub>, D<sub>2</sub> and D<sub>3</sub> is NNW-SSE, NW-SE and ENE-WSW, respectively. Such a pattern could be induced by an anticlockwise rotation of principal maximum stress in the Mako sector. The Eburnean granitoids emplaced before and during these three Eburnean orogenic phases.

**Keywords:** Eburnean, Birimian, thrust, transpression, transtension, Kédougou-Kéniéba inlier