Characterization of the Southern Maradi Basement deformation in the Maraka-Chirgué area (northeastern edge of Benin-Nigeria Shield)

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The southern Maradi basement represents the northern border of the Benin-Nigeria Shield belonging to the Pan-African mobile belt, which is located on the eastern part of the West African Craton (Fig. 1). The Benin-Nigeria Shield consists mainly of migmatites, gneisses, metavolcano-sediments and granitoïds which ages range from Birimian to Pan-African (Turner, 1983; Dada, 1998; Caby et al., 2001). However, in the South Maradi area, Birimian formation has not yet been highlighted.

Petrofabrics analysis highlights the existence of at least two deformation phases called D_1 and D_2. The first one (D_1) is ductile to semi-ductile and the second one (D_2) is brittle.

The first deformation phase D_1 is reported in gneisses, migmatites, schists and granitoïds. It includes three stages (D_{1a}, D_{1b} and D_{1c}). The first stage D_{1a} is related to a migmatization period marked by the formation of anisopachous folds more or less affected by ductile shearing. The D_{1b} stage is characterized by a ductile coaxial deformation characterized by the regional schistosity or foliation S1 with N20° to N50° trending plane. The D_{1c} stage is a mylonitization period. It is characterized by a semi-ductile non coaxial deformation. Structural objects show the transition to sinistral or dextral sigmoid S/C fabrics.

The D_2 deformation phase, essentially brittle is marked by two types of fracture cleavage with N35° and N120° trending planes.

Key words: Pan-African mobile zone, Benin-Nigeria Shield, migmatization, mylonitization.

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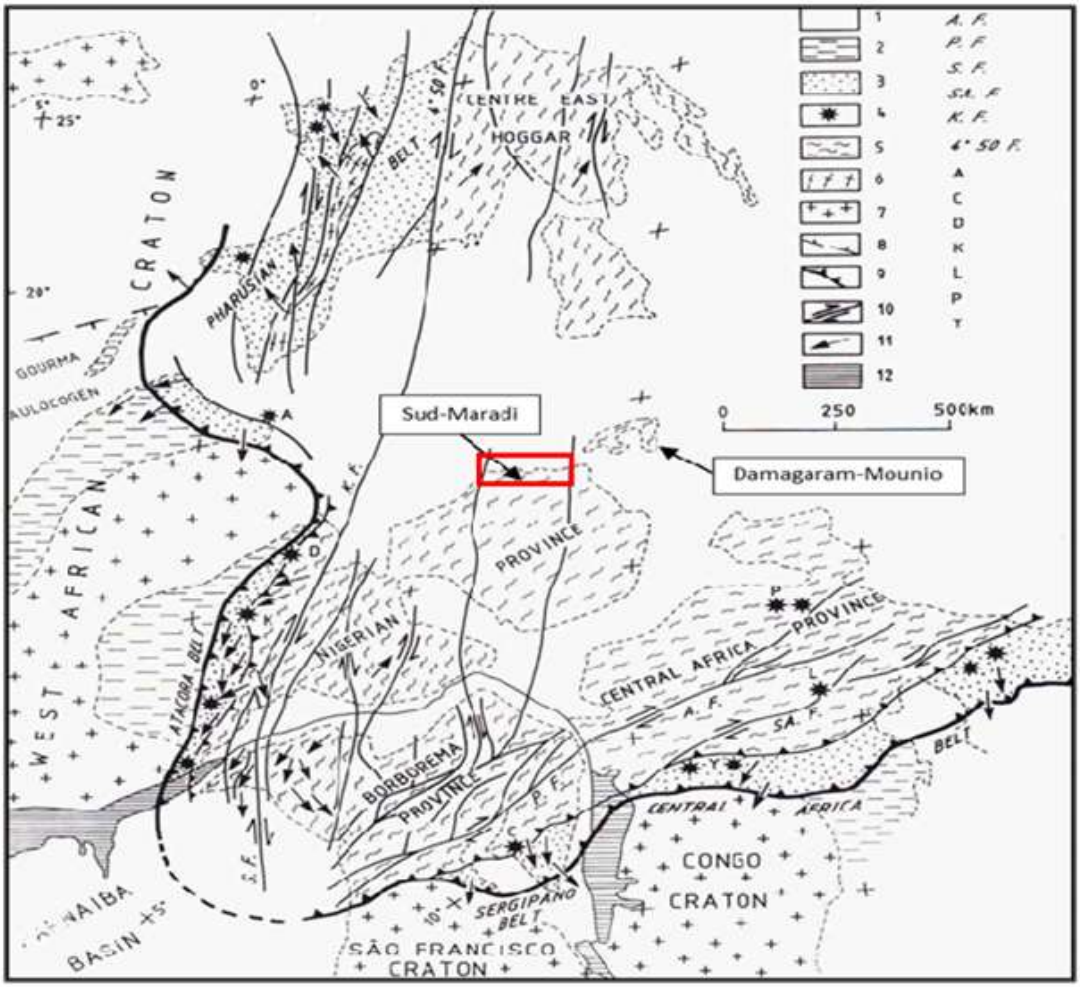

Fig. 1: Localization of southern Maradi basement (Castaing et al., 1993). 1. Phanerozoic cover ; 2. Proterozoic cover, 3. Pan-African volcano-sedimentary belts ; 4. Main mafic and ultramafic massifs highlighting the suture zone; 5. Gneiss, metasediments, migmatites and mono- or poly-cyclic granitoids; 6. In Ouzzal and Iforas Eburnean granulites; 7. Cratons at 2 Ga ; 8. Aulacogene of Gourma ; 9. Major external thrusts; 10. Main shear zones ; 11. Tectonic transport direction of nappes ; 12. sea ; Faults of AF: Anaga-Adamaoua; PF: Pernambouco; SF: Sobral; SAF: Sanaga ; K.F.: Kandi ; A, C, D, K, L, P, Y: Metamafic complexes of Amalaoulaou, Canindé, Dérouvarou, Kabyé, Lom, Poli, Yaoundé.