

## **Archean inheritance in the juvenile Paleoproterozoic (Birimian) domain of Man Rise: Geochemical and Geodynamical implications**

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The juvenile character of Birimian rocks of the Baoulé-Mossi domain is well established and the Birimian occupies a specific place in the evolution of the continental lithosphere between 2.5 and 1.9 Ga with a paroxysm at 2.1 Ga. Thus, this juvenile character has led many authors to evoke a tectonic context as oceanic plateaus, very far from Archean continent for the genesis of the Baoulé-Mossi domain, without any contamination. For others, the genesis of the Baoulé-Mossi domain is made with a high interaction of the Archean continent, particularly in a rifting context. Recent works based on thermo-mechanical models stipulate that the exhumation of metasediment lying on TTG basement is triggered by folding/shortening and gravitational instabilities in volcanic island arcs environment. Our geochemical and geochronological data obtained in the Transition Zone (TZ) of the Baoulé-Mossi domain indicate the existence of Archean components inheritance in the basement gneisses, the granitoids and the volcanites. The  $\epsilon\text{Nd}$  are often negative or fairly positive ( $\epsilon\text{Nd} = \pm 1$ ) and the TDM model ages are sometimes older than 2500 Ma. Mixing model calculations carried out on the samples would indicate an average contribution of Archean crust from 5 to 20% in the Birimian magmatism, leading to a decrease of  $\epsilon\text{Nd}$  (2.1Ga) from +5.5 to +2.5 on average. This contribution could reach or pass 30% for the Dabakalian rocks and in this case, the  $\epsilon\text{Nd}$  (2.1Ga) can be smaller than -2. In-situ zircon dating (SIMS and ICPMS-LA) and evaporated zircon age (TIMS) highlight effectively Archean inheritance (2.6 to 2.9 Ga) in Dabakalian tonalitic gneiss (2.25 Ga), partially remobilized during Birimian sensu stricto event (2.08 Ga). The present results in the TZ and those obtained in the Eglab (Reguibat Rise) lead us to support a rifting model of an Archean protocontinent for the genesis of the Baoulé-Mossi domain. This rifting was probably occurring during Archean at ca 3.0-2.7 Ga with oceanization. The recycling of the Archean crust during the rifting will contaminate later the juvenile Dabakalian and Birimian magmas at respective rates of 30 and 15%. More thought must be given on the Archean crustal contribution in the genesis of the Birimian mineralization. Up to now, no more study seems to reveal Archean relics in Birimian mineralization. Investigations should be initiated in the Birimian ore deposits located in the Kenema-Man domain to highlight such interaction.

**Keywords:** Transition Zone, Baoulé-Mossi domain, Dabakalian, Birimian, Eburnean, U-Pb dating, zircon inheritance.