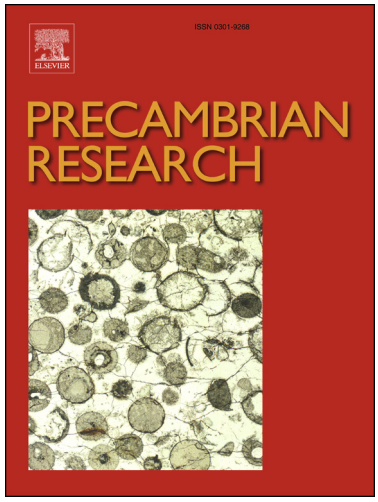

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The onset of the Eburnean collision with the Kenema-Man craton evidenced by plutonic and volcanosedimentary rock record of the Masssigui region, southern Mali

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Abstract

The Massigui region is located in the western Paleoproterozoic Baoulé-Mossi domain close to the Archean Kenema-Man domain, Man Shield, West African Craton, which is an ideal place for studying their amalgamation. The Massigui region consists of volcano-sedimentary sequences intruded by granitoid and dioritoid bodies and is transected by the large NE-SW Banifing Shear Zone. Metamorphism reached upper greenschist facies, locally amphibolite facies. Four tectonic phases have been recorded. The isoclinal folding D1 and transpressive D2 deformations correspond to the formation and the displacement along the Banifing Shear Zone that occurred during the deposition of the volcano-sedimentary sequences and the emplacement of most granitoids. Brittle-ductile deformation D3 participated in the structuration of the area while post-Eburnean D4 brittle deformation had only minor effects.

Zircon SHRIMP U-Pb ages of granitoids and dioritoids indicate a major period of magmatic activity at c. 2100 Ma (Massigui quartz monzodiorite: 2112 ±5 Ma, granodiorite: 2103 ±5 Ma, pink quartz monzonite: 2095 ±9 Ma; Syobougou quartz microdiorite: 2102 ±10 Ma; Tiefala foliated quartz micromonzodiorite: 2106 ±11 Ma). SHRIMP U-Pb ages of detrital zircons show that the sources of the sediment are exclusively Birimian, with three well-defined detrital ages at 2125 ±8 Ma (22% zircons), 2148 ±6 Ma (28%) and 2215 ±13 Ma (14%). Major and trace elements indicate that the dioritic intrusions belong to a medium-K sequence