

## New SHRIMP U-Pb zircon ages of the Paleoproterozoic metasedimentary and plutonic rocks of the Massigui Square Degree (Southern Mali)

Ousmane Wane<sup>1,\*</sup>, Jean-Paul Liégeois<sup>2</sup>, Nicolas Thébaud<sup>3</sup>, John Miller<sup>4</sup>, Václav Metelka<sup>3,4</sup>, Mark Jessell<sup>3</sup>

<sup>1</sup>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; <sup>2</sup>Geodynamics and Mineral Resources, Royal Museum for central Africa, B-3080 Tervuren, Belgium; <sup>3</sup>Centre For Exploration Targeting, School of Earth and Environment, University of Western Australia, Crawley WA 6009, Australia; <sup>4</sup>CSIRO - Australian Resources Research Centre, 26 Dick Perry Avenue, Kensington 6152, WA, Australia

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

The Massigui square degree, situated in Southern Mali, is located to the NW of the Man Shield, southern West African Craton (WAC), which is made of an Archean domain to the west (Kénéma-Man domain) and a Paleoproterozoic domain to the east (Baoulé-Mossi domain). Through its proximity to the Archean craton, it is a key area for understanding the amalgamation of these two components of the WAC.

The Massigui region consists of Birimian volcanosedimentary sequences intruded by large Eburnean magmatic intrusions ranging in composition from diorite to monzogranite, through monzodiorite, monzonite and granodiorite. The volcanosedimentary sequences are mostly made of biotite ± muscovite quartzofeldspathic metasediments, in which felsic metavolcanic levels are intercalated. The metasediments are made of metagreywackes, metapelites, schists and locally micaschists. The metagreywackes contain amphibole and garnet, and can be rich in microcline and contain locally pinnite. They differ from the metapelites by the size of grain and the proportion of the matrix. Metavolcanic rocks are usually metadacites and metarhyolites. Metamorphism reached upper greenschist facies, and amphibolite facies close to large plutonic bodies or within the Banifing Shear Zone (BSZ). The Massigui region is transected by a large NE-SW oriented shear zone that extends for hundreds of km and referred to as the BSZ.

New SHRIMP U-Pb geochronological data were obtained from five samples of plutonic rocks and three samples of metasedimentary rocks of the Massigui Square Degree (MSD). 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; Tiéfala 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%). The combination of new data with historical data sets provides a useful opportunity to refine time constraints on the source and the tectonic context of the MSD as well as derive constraints toward a geodynamical model for this Birimian segment and the Eburnean orogeny.

**Keywords** : Massigui, U-Pb, zircon ages, SHRIMP, metasedimentary rocks, plutonic rocks, southern Mali

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