

**Different geochronological approaches to better constrain the diagenesis and sediment sources in the Mbuji-Mayi Supergroup, (Proterozoic, DR Congo)**

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The Mbuji-Mayi Supergroup, DRC, is located between the Archean-Paleoproterozoic Kasai Craton and the Mesoproterozoic Kibaran Belt. This sedimentary sequence is unaffected by regional metamorphism and comprises a large diversity of well-preserved microfossils, evidencing the evolution of complex life (early eukaryotes) for the first time in Mesoproterozoic record of Central Africa (*Baludikay et al., 2016*). The lithostratigraphy consists of two distinct successions (i) BII Group: a badly constrained upper carbonate sequence intercalated with some shale levels. Basaltic lavas topping the Mbuji-Mayi Supergroup were dated around 950 Ma (e.g. *Cahen et al., 1984*) and (ii) BI Group: a lower siliciclastic sequence (ca. 1174 Ma to ca. 1055 Ma (e.g. *Cahen, 1974; Delpomdor et al., 2013*).

The diagenesis of BI Group was dated by U-Th-Pb dating with LA-ICP-MS and Electron MicroProbe (on xenotime, monazite and zircon) between 1030 and 1065 Ma. Different sources of sediments were observed in the basin and through time. We performed Re-Os dating on fossiliferous shales with the method developed by *Birck et al. (1997)*, to better constrain the age of this BII Group and the age of microfossils in the Mesoproterozoic interval. We also re-evaluated the age of basaltic lavas topping the Supergroup with Ar-Ar technique to constrain the end of diagenesis.