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**Biostratigraphy, chemostratigraphy and kerogen
paleothermometry of the Proterozoic Mbuji-Mayi Supergroup
(Kasaï, Democratic Republic of Congo)**



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The Mbuji-Mayi Supergroup is a sedimentary sequence in Democratic Republic of Congo (DRC) unaffected by regional metamorphism. It consists of two distinct successions: a lower, ~500 m thick siliciclastic sequence of the BI Group and an upper, ~1000 m thick carbonate sequence with stromatolitic build-ups and black shales of the BII Group directly overlain by basaltic lavas [1]. Radiometric data suggest a Latest Meso.–Early Neoproterozoic age [2, 3, 4, and 5].

Five boreholes from Sankuru–Mbuji-Mayi region have been sampled in detail. Siliciclastic rocks were investigated for microfossils. A well preserved and diversified microfossil assemblage is reported including 52 taxa belonging to 31 genera. The potential Late Mesoproterozoic–Tonian index fossil *Trachyhystrichosphaera aimika*, is reported for the first time in central Africa, and co-occurs with other eukaryotes and prokaryotes, evidencing biosphere diversification similarly to other worldwide Proterozoic stratified oceans [6]. Moreover, $\delta^{13}\text{C}_{\text{carb}}$ positive and negative excursions in the carbonate sequence do not exhibit evidence so far for the Bitter Springs Stage [7] as previously suggested [4].

Thermal maturity of kerogen calculated on macerate residues and in situ in polished thin sections, using geothermometers for low-grade metamorphism [9], reveals thermal palaeoenvironments of organic matter, ranging from 180 to 279° C (average = 249 ± 37 °C). The range of thermal maturity is similar, in both microfossils and amorphous organic matter. Raman reflectance ($R_{\text{mc}R_0}$ %), which is also an index indicative of maturity [9], ranges from 1.05 to 2.55 % (average = 2.01 ± 0.42 %). So, organic matter from Mbuji-Mayi is likely into a maturation stage corresponding to oil window.

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