

Tectonic signatures of Post-Gondwana break-up in the West Congo Belt (D.R. Congo): first results from low-temperature thermochronology

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Abstract

Low-temperature thermochronology is the principal method to investigate tectonic movements in the upper crust, and to place them into an absolute timeframe. The method has been used numerous times to investigate passive margins around the South Atlantic, with mainly a focus on the South American continent. On the African margins studies have also been conducted in different countries (South Africa, Namibia, Cameroon, ...). This study is the first to conduct thermochronologic research on the western margin of the D.R. Congo. The geology in the region is dominated by the West Congo Belt, which is the eastern part of the Araçuaí – West Congo orogen (AWCO). Currently the western Araçuaí counterpart lies on the South American continent (Brazil). The AWCO was a confined orogen that was enclosed by the São Francisco – Congo craton, that had formed as a result of the Brasiliano – Pan African orogeny (latest Neoproterozoic). The AWCO was separated, rifted and became two individual passive margins during the Early Cretaceous (~130 Ma). We acquired samples on two E-W and two N-S profiles in the Central Congo province, consisting both of archive samples from the Royal Museum for Central Africa (Tervuren, Belgium) and newly obtained samples from a field campaign in 2016. The samples are analysed with the apatite fission track (AFT) and the apatite (U-Th-Sm)/He (AHe) combined methods. Tectonic reactivation will be mostly visible in the E-W profiles, while the N-S profiles could yield information concerning current hypotheses involving transform faults related to the opening of the South Atlantic.