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The Mesoproterozoic Karagwe-Ankole Belt (formerly the NE Kibara Belt): The result of prolonged extensional intracratonic basin development punctuated by two short-lived far-field compressional events

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ABSTRACT

The Mesoproterozoic Kibara Belt (also Kibaran Belt or Kibarides in some references) of Central Africa was often portrayed as a continuous, c. 1500 km long orogenic belt, trending NE to NNE from Katanga, Democratic Republic of Congo (DRC) in the south, up into SW Uganda in the north. Recently however, the Karagwe-Ankole Belt (KAB; formerly the NE Kibara Belt) has been redefined as the part north of a NW oriented Palaeoproterozoic basement high of the Ubende-Rusizi Belts, while the Kibara Belt (KIB) is now limited to the part south of this rise.

We present a lithostratigraphy for the KAB that takes into account two rheologically contrasting structural domains (Western and Eastern Domain); each of them being characterised by independent sedimentary sub basin(s) and depositional conditions: the ED with Archaean basement versus the WD with Palaeoproterozoic basement. We document new volcanic and detrital U–Pb SHRIMP zircon data which provide new constraints on the timing of deposition and on the detrital provenance of the sedimentary sequences in the KAB. We discuss the evolution of the KAB in a wider regional context, comparing it to other Mesoproterozoic units and with reference to the general geodynamic history of this part of the African continent in Proterozoic times.

The lithostratigraphic successions of the KAB are only valid respectively in the ED (Kagera Supergroup) or in the WD (Akanyaru Supergroup), with no correlations between them. Deposition of the Kagera Supergroup in the ED is bracketed between 1.78 Ga and 1.37 Ga and the deposits have to be considered an Eburnean-age "molasse". Detrital components comprise material only of Archaean and Palaeoproterozoic age, consistent with derivation from nearby source regions. In the WD, deposition of the two lowermost groups of the Akanyaru Supergroup is bracketed between 1.42 Ga and 1.37 Ga. The large contribution of detrital Palaeoproterozoic components in the WD strengthens the view that this domain is underlain by Palaeoproterozoic basement and supports the concept that part of the Akanyaru Supergroup sediments consists of reworked Eburnean-aged molasse. In the WD of the Kivu-Maniema area (DRC), later sedimentation periods are documented at respectively 1222 Ma and 710 Ma. The KAB documents a long-lived period of intracratonic intermittent depositional activity (with periods of interruption of deposition, erosion and magmatism) showing a recurrent subsidence trend controlled by structural activity moving with time from E to W.

On a regional scale, we postulate that since 1.8 Ga, following the amalgamation of Archaean and Palaeoproterozoic landmasses into a single coherent 'proto-Congo Craton', various long-lived shallow-water intracratonic basins (aulacogenes) developed. These basins underwent a comparable Mesoproterozoic geodynamic evolution, as shown not only in the sequences of the KAB and of the relatively close Kibara (KIB), Bangweulu Block and Northern Irumide Belts, but even in more distant sequences located in SW Angola and E Brazil.

The long-lived aulacogene history of the KAB within the proto-Congo Craton is interrupted only twice by short-lived compressional deformation reflecting far-field effects of global orogenic events, external to the proto-Congo Craton. The first event at 1.0 Ga is related to Rodinia amalgamation. The second event at 550 Ma results from Gondwana amalgamation and develops a N–S Pan African overprint in the KAB which has previously been underestimated or even overlooked. Three mineralisation provinces

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