

## The Northeastern Kibaran Belt (NKB): a 1250 Ma-long Proterozoic intracratonic history in Central Africa punctuated by two orogenic events at 1.0 and 0.55 Ga

M. Fernandez-Alonso<sup>1</sup>, B. De Waele<sup>2</sup>, A. Tahon<sup>1</sup>, S. Dewaele<sup>1</sup>, D. Baudet<sup>1</sup>, H. Cutten<sup>3</sup> & L. Tack<sup>1</sup>

<sup>1</sup> Department of Geology & Mineralogy, Royal Museum for Central Africa, Tervuren, Belgium; e-mail:

<sup>2</sup> SRK Consulting, 10 Richardson Street, West Perth, WA6005, Western Australia

<sup>3</sup> Geological Survey of Western Australia, 100 Plain Street, East Perth, WA6004, Western Australia  
max.fernandez@africamuseum.be

The “Kibaran Belt s.l.”, a 1500 km long orogenic belt that runs from the Katanga Province in the Democratic Republic of Congo (DRC) to eastern DRC, Rwanda, Burundi, NW Tanzania and SW Uganda consists, in fact, of two segments, separated by a Palaeoproterozoic (Rusizian) basement rise in continuity with the NW-SE trending Ubendian shear belt along the Tanzania-DRC-Zambia border (Tack et al., this meeting). For the entire “Northeastern Kibaran Belt” (NKB), i.e. the part of the belt NE of the Rusizian rise, a geologic map including an overview of new uniform lithostratigraphies has been published by Fernandez-Alonso (2007; see [www.africamuseum.be](http://www.africamuseum.be)). This map shows the existence of two different structural domains within the NKB, i.e. the Western (WD) and Eastern Domain (ED), corresponding respectively to the mobile belt underlain by Eburnean-aged terranes and to tabular and unmetamorphosed cover deposits resting on the Archaean Tanzania Craton. New evidence, including SHRIMP dating and provenance analysis of detrital zircons are in agreement with the new isotopic data for the NKB magmatism (Tack et al., this meeting) and support a 1250 Ma-long history for the NKB, marked by only a few prominent events. Since 1.78 Ga, repeated reactivation of the Ubendian-Rusizian basement rise, controlled volcano-sedimentary basin development. Peak basin infill (intermittent subsiding shallow-water deposits and bimodal volcanism) shifted from the E (Eburnean molasse at 1.78 Ga) to the W (Neoproterozoic Itombwe Supergroup, including a tillite). Transtension culminated at 1375 Ma with the intracratonic emplacement of a Large Igneous Province (LIP), related to a thermal (mantle) anomaly giving rise to coeval bimodal magmatism (Tack et al., this meeting). In the last decades, two contrasting geodynamic models for the “Kibaran Belt s.l.” have been opposed: an intraplate extensional setting with bimodal magmatism and compressional event(s) *versus* a convergent setting along an active continental margin. Both models implicitly consider that the Kibaran “orogeny” occurred in (central) Africa in “late” Mesoproterozoic times (1.4-1.0 Ga) and had a protracted character with “culmination from before 1370 Ma to 1310 Ma” (Cahen et al., 1984). Tack et al. (this meeting) have shown that the prominent tectono-magmatic 1375 Ma “event” corresponds to the emplacement of a LIP, which is a punctual intraplate transtensional “anorogenic” event, not related to an orogenic “cycle”. Compressional events only occurred at the edge of the Congo Craton at 1.0 Ga in the Irumide belt of Zambia (De Waele et al., 2009). These compressional events resulted in the morpho-structural shaping of the NKB (and the Kibaran Belt s.l.), as a far-field effect of the Irumide Orogen accommodated by transfer along the Ubendian shear belt. Post-compressional relaxation gave rise to the emplacement of the “post-Kibaran” Sn-Nb-Ta-W metallogenic province (new SHRIMP-age of Sn-granite at 986 Ma). A new compressional event affected the southern NKB as a far-field effect of the 550 Ma East African Orogen (EAO). Due to the indenter palaeomorphology of the Archaean Tanzania Craton, the EAO resulted in the folding of the Itombwe Syncline (a local Neoproterozoic basin in the NKB), discrete isotopic resetting and post-compressional 530 Ma emplacement of late Pan African Au mineralisation. This strong discrete N-S Pan-African overprint in the NKB has generally been underestimated or even overlooked. Traditionally, the term “Kibaran” has been used by geoscientists to denote Mesoproterozoic orogenic events in Africa. At the same time, these events are often indiscriminately related to the amalgamation of the Rodinia supercontinent at the end of the Mesoproterozoic Era (1.0 Ga), even though the (way of) participation of the various African cratonic blocks to Rodinia amalgamation is still very much in dispute. As a result, a lot of debate and misunderstanding has been introduced by the simultaneous use of various regional names (including Kibara, Natal, Namaqua, Irumide, or even Grenville) for correlative purposes. Tack et al. (this meeting) have suggested to restrict in future the term of “Kibaran” only to the prominent 1375 Ma LIP-event.