THE PROTEROZOIC HISTORY OF THE PROTO-CONGO CRATON OF CENTRAL AFRICA

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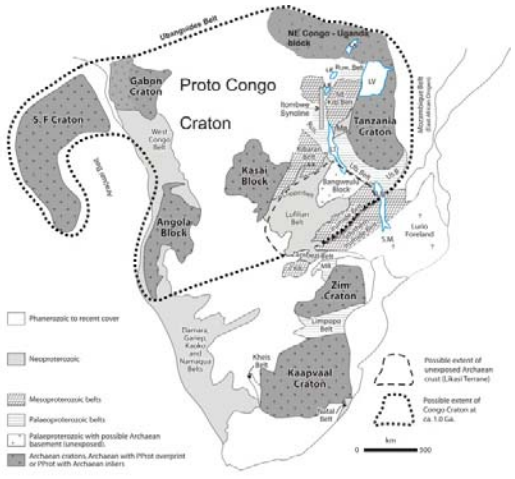
In terms of geographic extension, the "Congo Craton" has been only loosely defined in the last few decades (Lepersonne, 1974; Cahen et al. 1984 and references therein). For many geoscientists, it corresponds to the continental-scale circular Congo River Basin (CRB) of central Africa with a surrounding rim of spatially discontinuous Proterozoic and Archaean terranes. The CRB, marked by a gravity low, consists of a pile of less than 2,000 m sedimentary rocks, spaced in time between the base of the Karoo Supergroup (ca. 320 Ma) and the Holocene. This pile rests on a pre-Karoo basement, exposed in the surrounding rim. Recent geophysical work shows that there is no unexposed Archaean nucleus in the basement under the CRB but, rather that it is probably entirely composed of Palaeoproterozoic units (Crosby et al., 2010; Kadima et al., 2010). This is confirmed from seismic tomography under Central Africa (Pasyanos et al., 2007) showing the lack of a thick cratonic keel beneath the CRB, reflecting the absence of an extra Archaean nucleus.

We postulate that the Proto-Congo Craton should be understood as an assemblage of 6 Archaean nuclei welded together around 2.1Ga and later exhumed around 1.8 Ga as a result of Eburnean-aged collisional orogeny during the Columbia (Nuna) amalgamation (De Waele et al., 2006; 2008; Delor et al., 2008; Noce et al., 2007; Pinna et al., 1996). A variety of local names has been given to these distinct Archaean - Palaeoproterozoic terranes, such as, anticlockwise from SW: the Angola-Kasai Block, the Bangweulu Block, the Tanzania Block, the NE Congo-Uganda Block, the South Cameroon "Ntem" - Gabon "Chaillu"Block and the São Francisco Block.

Since the late–Palaeoproterozoic this Proto-Congo Craton has stabilized and remained a united entity (Tack et al., 2006; 2008; 2009). The craton underwent only intra-cratonic tectonic events (rifting and magmatism; Delvaux et al, Tack et al; this conference) which never evolved into the formation of juvenile oceanic crust and breakup of the craton; all major Rodinia and Gondwana events happened along its margins. Only during the opening of the south Atlantic since Cretaceous times a minor portion (the westernmost Sao Francisco Block) became separated.

Recent work (Delvaux et al, 2010, Kadima et al, 2010, Tack et al, 2010) discuss that these intracratonic events occurred throughout the Proto-Craton, not only during the Neoproterozoic but also during the Mesoproterozoic; the latter only in the E part of the Proto-Craton as there is no Mesoproterozoic elsewhere in or around the Proto-Craton. Moreover, these units never develop in/on an Archaean basement as they are always found in/on existing Palaeoproterozoic terranes, while their structural setting and buildup seems controlled by the reactivation of pre-existing "Eburnean aged" structures (e.g. Fernandez-Alonso et al, 1998).



Following the Gondwana amalgamation, this Proto-Congo Craton became bordered along its N and E rim by Pan-African collisional high-grade metamorphic terranes (incorporating Archaean and/or Palaeoproterozoic inherited protolith), while on the contrary the W and S to SE rim form foreland domains to Pan-African orogenic belts. Within the Proto-Congo Craton, other tabular (or moderately deformed) Neoproterozoic sedimentary sequences occur in several intracratonic basins (aulacogenes) which have not experienced collisional orogenic processes. Interestingly, rock types in these Neoproterozoic orogenic units are very much comparable because depositional conditions within and around the Proto-Congo Craton were relatively similar during the Neoproterozoic, albeit diachronous.