GROWTH OF THE IRUMIDE TERRANES AND SLICES OF ARCHAEAN AGE IN EASTERN ZAMBIA. B.S. Mapani[1], T. Rivers[2], F. Tembo[3], B. DeWaele[4] and C. Katongo[3], [1]University of Namibia, Geology Department, Private bag 13301, Windhoek, Namibia, benmapani@yahoo.co.uk, [2]Department of Earth Sciences, Memorial University, St. John's, Newfoundland, A1B 3X5, [3]University of Zambia, Department of Geology, P.O. Box 32379, Lusaka, Zambia, [4]Tectonics Special Research Centre, School of Applied Geology, Curtin University of Technology, Bentley, WA, Australia.

We propose a testable subdivision of the Mesoproterozoic Irumide belt in eastern Zambia (Fig. 1) into several thrust-bound, stacked tectonometamorphic terranes that we infer were imbricated during the Irumide orogeny (~1.05-1.0 Ga).

The parautochthonous *Serenje terrane*, at the base of the stack, consists of basement gneisses, migmatites and granites of Archaean or Palaeoproterozoic age, overlain by conglomerate, quartzite and pelite of the late Palaeoproterozoic Muva Supergroup. Detrital monazite ages from this terrane range from 2720 Ma (U-Pb) [1] from Changwena hill quartzite, 25 km south-east of Serenje town, to 1625 Ma in the Kapiri Mposhi area [2]. The supracrustal rocks are polydeformed into upright structures and variably metamorphosed from greenschist facies near the Irumide Front to uppermost amphibolite facies farther to the southeast, where the sub-assemblage *Sil-Kfs-Crd-L* is stable. Farther southeast, the *Luangwa terrane* consists of polydeformed mid-amphibolite facies muscovite-rich quartzite, *Grt-Sil-St* schist, minor carbonate and layered metavolcanic units that display prominent recumbent folds. Cox et al. [3] recently obtained ages of 2.6 Ga within the Luangwa terrane, showing that slices of Archaean crust are present within this polydeformed complex terrane. The high-grade gneisses in the Serenje and Luangwa terranes are locally overlain by a package of greenschist-facies rocks, including mafic metavolcanics, *Qtz-Ms-Chl* schist, quartzite and conglomerate that characterise the Rufunsa sequence, but the contact between the low-grade Rufunsa sequence and the high-grade Serenje and Luangwa terranes has not been observed. The *Nyimba terrane*, overlying the Luangwa terrane to the southeast, is largely composed of marble and *Di±Tr*-bearing calc-silicate, with the mutual boundary between the terranes being the site of subhorizontal, SE-trending, amphibolite-facies stretching lineations and tectonic mélange and inferred to be a ductile thrust. The Nyimba terrane is tectonically overlain by the *Petauke-Sinda terrane*, which is predominantly composed of a calc-alkaline suite of gabbroic, dioritic, tonalitic and granitic plutons that carry enclaves of mafic rocks with a MORB-like signature, together with subordinate supracrustal rocks including graphitic gneiss and pelite with the sub-assemblage *Sil-Crd*. The grade of metamorphism is uppermost amphibolite- to granulite-facies. The *Chipata terrane*, southeast of the Petauke-Sinda terrane, is dominated by low-pressure retrogressed mafic and felsic granulites of supracrustal origin. Available U/Pb data indicate that granitoid magmatism and regional metamorphism in all five terranes took place between ~1.05-1.0 Ga, which we relate to the Irumide orogeny. However, terrane accretion started in the Late Archean and continued until the Neoproterozoic.

We infer that the supracrustal rocks of the Serenje, Luangwa and Nyimba terranes formed on the platform and margin of the Paleoproterozoic Congo-Tanzania-Bangweulu (CTB) craton, and that the rocks of the Petauke-Sinda terrane represent a Mesoproterozoic arc that either developed on the margin of that craton, or was accreted to it during the Irumide orogeny. We infer that Chipata terrane, situated outboard and structurally on top of the arc, is part of another craton and, thus, that the boundary between Chipata and Petauke-Sinda terranes is a suture. The Rufunsa sequence is interpreted to be continental in origin and to have developed on the CTB craton, but its relation to the other terranes of the CTB craton remains unconstrained.

References: [1] Snelling , N.J., Hamilton, E.I., Drysdall, A.R. and Stillman, C.J. (1964) A review of age determinations from Northern Rhodesia. *Economic Geology 59, 961-981*. [2] Snelling, N.J., Johnson, R.L., and Drysdall, A.R. (1972) The Geochronology of Zambia. *Records, volume 12, Geological Survey Zambia* [3] Cox, R.A., Rivers, T., Mapani, B.S., Tembo, F., and DeWaele, B. (2002) 3rd International Field Meeting for IGCP418/440, Abstracts. The Kibaran of Southwestern Africa/Super continent reconstruction for Rodinia. 27 July, 2002, Windhoek, Namibia).

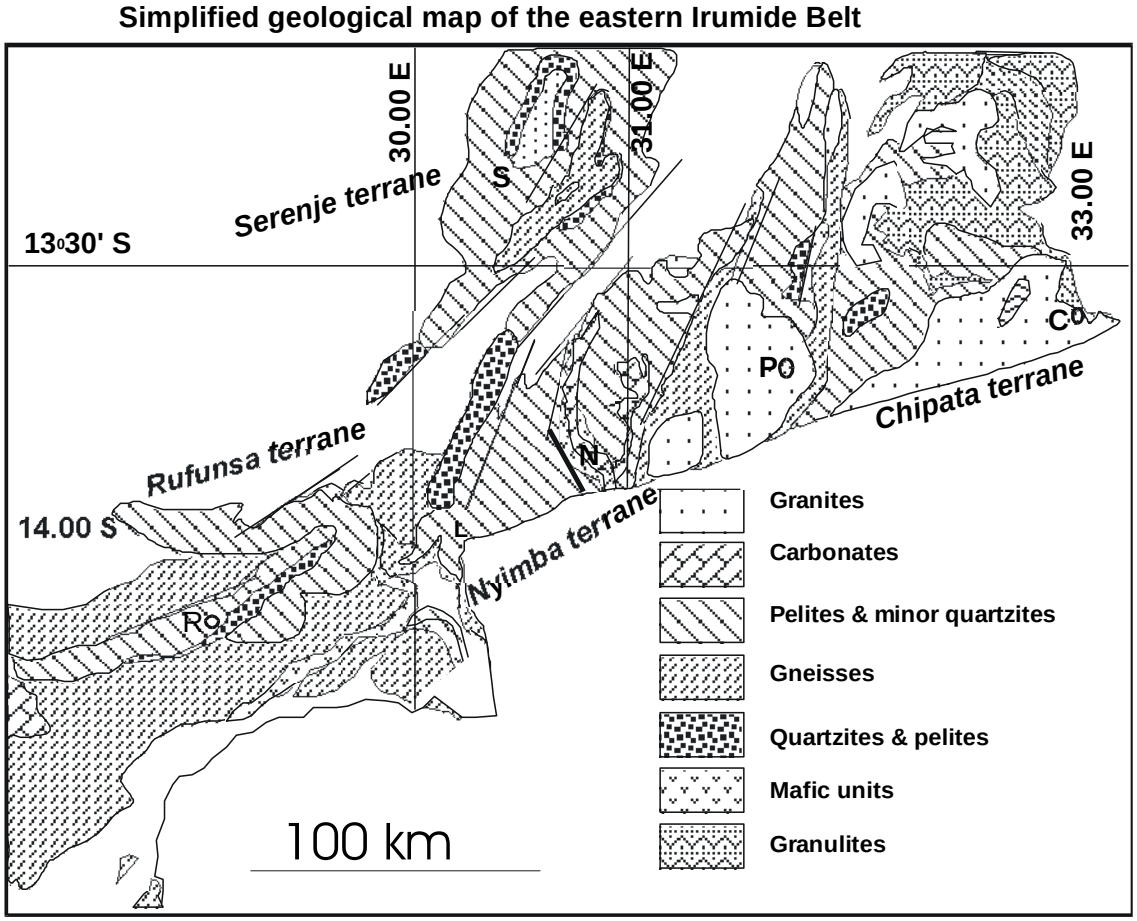

Figure 1. Simplified geological map of the eastern Irumide Belt.