

Archean Tectonics and Magmatism in the Northern Marginal Zone, Limpopo Belt, Zimbabwe

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The Limpopo Belt has been cited as a type example of an Archean mobile belt, and as a product of a single, Archean collisional orogenesis. More recently, the exhumation of granulites in the belt has been attributed to two events, one in the late Archean and the other in the early Proterozoic. Our study area in the Northern Marginal Zone of the belt consists of mafic and ultramafic granulites and banded iron formations of probable supracrustal origin, intruded by felsic gneisses, enderbites and granites. A regional foliation dips steeply to the Southeast in most of these rock types. The boundary with the Zimbabwe craton is a reverse shear zone. Pb-Pb evaporation ages of 2595 and 2580 Ma for syntectonic granites in the shear zone and its footwall demonstrate a late Archean age for the thrusting. Massive enderbite and weakly deformed pegmatite have slightly younger late Archean ages (2571 and 2533 Ma). The latest structures consist of a few, isolated greenschist facies shear zones up to a few hundred metres long. Granitoid magmatism, thrusting and peak metamorphism occurred at the end of the Archean, and the latest structures could not have accommodated significant later movement. Granulite exhumation was therefore probably a single, late Archean event, possibly associated with mantle delamination.