

# **FORMATION OF NEOPROTEROZOIC HP/HT REGIONAL GRANULITE TERRANES IN EASTERN AFRICA AND IMPLICATIONS FOR THE GONDWANA ASSEMBLY**

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Regional high pressure and high temperature (HP/HT) granulite-facies terranes are ubiquitous in eastern Africa and usually form mountainous terrains, i.e. in the approximately 7000 km - long Mozambique belt which stretches from Mozambique via Tanzania and Kenya to Eritrea.

PT data from the garnet-pyroxene bearing granulites, gneisses, meta - anorthosites, migmatites and eclogitic rocks in the central part of the belt (i.e. Malawi, Tanzania, Kenya) indicate that these rocks were formed at about 8 to 15 kbar and about 800° to 1000°C. Thus, these rocks originated from the upper mantle and the lowermost part of the crust. Anticlockwise and isobaric cooling (ACW-IBC) PT paths and high density CO<sub>2</sub> fluid inclusions are a characteristic of these rocks. Thrusts, isoclinal, recumbent and shear folds are seen to be always associated with these HP/HT rocks. This structural - metamorphic relationship suggests the occurrence of lithospheric - scale high grade thrust tectonics in the Mozambique belt; and that granulite-facies metamorphism in the belt was a product of crustal thickening.

Ages of the peak granulite-facies metamorphic events approximate the ages of the collision event and the assembly of the Gondwana fragments into a supercontinent. It is this assembly or collision that brought about crustal thickening in the belt. Zircon Pb-Pb evaporation and U-Pb SHRIMP ages document this event in the belt at about 640 Ma in Tanzania, ca 615 Ma in Mozambique and ca 550 - 580 Ma in Malawi. These granulite ages together with those from S. Madagascar (ca 560 - 565 Ma) suggest that the Gondwana assembly, along its suture (i.e. the Mozambique belt), was complex and that it took place from about 650 Ma and about 550 Ma.