

## Abstract

Two different Pan-African tectono-metamorphic events are recognised in the Taita Hill Tsavo East National Park/Galana river area, SE-Kenya (Mozambique belt) based on petrographic and geothermobarometric evidence. Structurally, this area can be subdivided into four units: (1) the easternmost part of the basement along the Galana river is characterized by subhorizontal slightly to the west and east dipping foliation planes. Migmatic paragneisses with intercalated marbles, calcsilicates and metapelites and bands of amphibolites are the dominant rock type. (2) The western part of the Galana river within the Tsavo East National Park is a ca. 25 km wide shear zone with subvertical foliation planes. The eastern part shows similar rocks as observed in unit 1, while towards west, metasedimentary units become rare and the main rock types are tonalitic gneisses with intercalated amphibolites. (3) A 10 km wide zone (Sagala Hills zone) between the strike slip zone (unit 2) and the Taita Hills (unit 4) is developed. This zone is characterized by elongated and folded felsic migmatic amphibole and garnet bearing orthogneiss bodies with intercalated bands of mafic rocks. (4) The Taita Hills are a slightly to the N dipping nappe stack. The main rock type in the Taita Hills are amphibole–biotite–plagioclase–quartz  $\pm$  garnet  $\pm$  clinopyroxene  $\pm$  scapolite bearing migmatic gneisses with mafic bands. In the southern part, metapelites, marbles and some amphibolites are common.

Although the geological structures are different in units 1 and 2, the calculated *PT* conditions are similar with peak *PT* of 760–820 °C and 7.5–9.5 kbar. Temperatures in unit 3 (Sagalla Hills zone) and unit 4 (Taita Hills) are slightly higher ca. 760–840 °C, but pressure is significantly higher, ranging from 10 to 12 kbar. Sillimanite growth around kyanite, garnet zonation pattern, mineral reaction textures, and *PT* calculations constrain a “clock-wise” *PT*-path with near isobaric cooling following the peak of metamorphism. The different *PT* conditions, tectonic setting, and a different age of metamorphism are evidence that units 1 and 2 (Galana river) belong to a different tectono-metamorphic event than unit 3 (Sagalla Hills zone) and 4 (Taita Hills). The major shear zone (unit 2) marks a tectonic suture dividing the two different tectono-metamorphic domains. It is also likely that it played an important role during exhumation of the granulite facies rocks from units 3 and 4.