

Abstract

In the Voi Area of Southern Kenya, the granulite facies rocks of the Taita Hills and the Tsavo East National Park (Galana River) can be divided into three structural domains: The Galana-East unit consists of an intercalation of flat lying metapelites and marbles of continental margin origin. These metasediments can be traced further east to the Uмба Steppe (Between Mombasa and Tanga). Galana-West consists of a N-S oriented wrench fault zone with vertical foliation planes and horizontal stretching lineation. Numerous shear sense indicators always show sinistral shear sense. Amphibolites of MORB affinity are involved in this wrench fault zone. To the west, this zone is bordered by calc-alkaline metatonalites of the Sagala Hills. The westernmost unit consists of the Taita Hills. They form an imbricated pile of southwestward thrust nappes containing metapelites, marbles, and ultramafics. The Taita Hills may be explained as part of an accretionary wedge. Southwestward nappes thrusting is also the prominent structure in the Pare and Usambara Mountains of Northern Tanzania. The following model may explain these observations: The Southern Kenya -- Northern Tanzania section of the Mozambique Belt is the result of continental collision tectonics. Remnants of an island arc and of an accretionary wedge that occur at least in the Voi area may be part of a former subduction zone. An oceanic domain between an eastern passive continental margin and a western terrane, now represented by the Tanzanian granulite belt has been closed incorporating island arc and accretionary wedge material. Oblique convergence of two continental blocks is suggested from wrench tectonics. The age of convergent tectonics is 530 -- 580 Ma, dated by Sm-Nd garnet-whole rock analysis. This is interpreted as the age of peak metamorphism.