



Granulite terrains in East Africa: geological, petrological, and geochemical aspects

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The geology and petrology of the mountain belts in eastern and central Tanzania, as well as southern Kenya were studied by different groups over the last 15 years. The resulting new geochronological, geochemical, structural geological and petrological data have led to a better understanding of the different orogenic events which took place in East Africa. The Paleoproterozoic Usagaran Belt is found to the east of the Archaean Tanzania craton. It consists of greenschist facies metasedimentary rocks, amphibolites, eclogite lenses, some granulites as well as abundant granitoids and volcanic sequences. The Neoproterozoic Mozambique Belt (MB) reworked parts of the Archaean and Paleoproterozoic rocks. We introduce for this part of the MB in Tanzania the term "Western Granulites". They are composed of granulite facies metapsammites and metapelites, migmatic gneisses, and mafic Grt-Px-Am bearing granulites. The "Eastern Granulites", also part of the MB, are clearly distinct from the "Western Granulites" by the occurrence of a basal unit consisting of migmatic Grt-Px-Am-Pl gneisses (meta-enderbites), mafic granulites and lenses of meta-anorthosites and a cover sequence consisting mainly of marbles, calcsilicates, and metapelites. The calc-alkaline geochemical characteristic of the meta-magmatic rocks of the "Eastern Gran-

ulites” indicate an Neoproterozoic island arc setting. The main metamorphic overprint in the “Western and Eastern Granulite” terrains occurred at about 640 Ma which is attributed to the collision of Azania with East Africa (Collins & Pisarevski, 2005). In southern Kenya, the Galana Shear Zone separates the Eastern Granulites (exposed in the Taita Hills) from another granulite facies terrane (“Galana East”) which underwent metamorphism around 550 Ma. PT conditions of granulite facies rocks from the “Western and Eastern Granulites” show surprisingly very uniform PT conditions of 770 to 850°C and 1.0 to 1.3 GPa. Considering the vast areas covered by the “Western and Eastern Granulites” we are concerned about the possibility whether these estimated uniform PT values are possibly artefacts of geothermobarometry (closure temperature of diffusion in garnet?). In order to evaluate this presumption selected samples from different areas from the “Western and Eastern Granulites” are investigated in detail by applying different geothermobarometric methods as well as interpreting observed mineral assemblages and reaction textures with calculated pseudosections. This project is financially supported by FWF P15599.

Collins & Pisarevski (2005). Amalgamating eastern Gondwana: The evolution of the Circum-Indian Orogens. *Earth-Science Reviews* 71,229-270