

# Petrological records of Paleoproterozoic and Neoproterozoic subduction-zone metamorphism in Tanzania

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High-pressure metamorphic rocks in the Ubendian–Usagaran Orogenic Belts records fluid-related processes at Paleoproterozoic and Neoproterozoic subduction zones. Recent *in-situ* zircon and monazite geochronological data, including our own new data, reveals a poly-orogenic nature of the Ubendian–Usagaran Orogenic Belts. Different tectonic terranes in the Ubendian Belt recorded unique tectonometamorphic history during the Proterozoic orogeny. The earliest Pacific-type subduction of basaltic rocks manifested by relics of eclogites of MORB-affinity is recorded in the Paleoproterozoic Ubende Terrane. Lithologic associations of the terrane indicates that the eclogites represent a tectonic slice of a subducted oceanic lithosphere. Eclogite–granulite transitional-facies metabasalts yield U–Pb zircon ages of 1.89–1.86 Ga as a subduction event that was followed by a collision of cryptic nature at 1.83 Ga.

The Ufipa Terrane in central Ubendian Belt hosts kyanite-bearing eclogites that were overprinted by a Pan-African granulite-facies regional metamorphism. Despite the high-temperature overprinting event, eclogite-facies stage kyanite and garnet preserve inclusions of prograde clinozoisite and omphacite. Zoned metamorphic zircons contain fluid inclusion-bearing cores of 1.96 Ga for a prograde eclogite-facies stage and rims of 605 Ma granulite-facies overgrowths. In contrast, kyanite-free eclogite were formed during Neoproterozoic time between 590 and 520 Ma in a Pan-African suture that separated the Tanzania Craton from the Bangweulu Craton. The Neoproterozoic eclogites have also MORB-type geochemistry and contains minor Cl-rich amphiboles. Development of omphacite-rich veins suggest fluid infiltration and consequent mineral precipitations during eclogite-facies metamorphism.

In this contribution, we will present new insights, including our on-going project, into the Proterozoic subduction-zone metamorphism and metamorphic evolution of the Ubendian–Usagaran Orogenic Belts.