# Dating basaltic volcanism in the Neoarchaean Sukumaland Greenstone Belt of the Tanzania Craton using the Sm–Nd method: implications for the geological evolution of the Tanzania Craton

S. Manya*, M.A.H. Maboko

***Department of Geology, University of Dar-es-Salaam, P.O. Box 35052, Dar-es-Salaam, Tanzania***
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## *Abstract*

Metabasalts from the Sukumaland Greenstone Belt of north western Tanzania yield a whole rock Sm–Nd isochron age of 2823 ± 44 Ma (initial $\varepsilon$(Nd) = 2.7, MSWD = 1.24). This age, which is interpreted as dating the eruption of the oldest mafic volcanics in the belt, is at the 95% confidence level indistinguishable from 2780 ± 3 and 2808 ± 3Ma single zircon U–Pb ages previously reported from stratigraphically higher rhyolitic pyroclastic rocks from the southern margin of the belt. The age equivalency suggests that the entire∼5–7 km thick greenstone sequence that has been traditionally classified into a predominantly mafic lower part overlain by an upper part in which felsic volcanics and BIF predominate, was emplaced within a relatively short time interval not exceeding ∼44 Ma. The Sm–Nd age of the metabasalts is significantly older than a published zircon U–Pb age of 2680 ± 3Ma obtained from a migmatitic gneiss on the southernmost fringe of the Sukumaland Greenstone Belt. This corroborates previous evidence that high-grade metamorphism in the Tanzania Craton postdates emplacement of the greenstones and is most likely associated with the regional emplacement of the large granitic bodies that intrude and flank the greenstones.
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