Geophysical Research Abstracts, Vol. 8, 06273, 2006
SRef-ID: 1607-7962/gra/EGU06-A-06273

Ongoing geological mapping and research in northwestern, central and southern Mozambique

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A major geological mapping programme was launched in Mozambique in 2002 as a part of the World Bank-financed "Mineral Resource Management Capacity Building Project". The Nordic Development Fund-financed "Geological Infrastructure Development Project" includes three large geological mapping areas that altogether cover the whole of Mozambique. Northwestern, central and southern Mozambique are mapped by the GTK-Consortium that joins the expertise of the following organisations: the Geological Survey of Finland (leading partner), the International Institute for Geo-Information and Earth Observation, Gondwana Lda. (Mozambican geological sub-consultant), the Geological Survey of Sweden, and the Geological Survey of Denmark and Greenland. The main objective of the GTK-Consortium is to produce modern digital geological maps (1:250 000) and extensive, supportive digital databases. Other key tasks include training of the personnel of the National Directorate of Geology of Mozambique and carrying out scientific research on selected topics. Collaborative scientific research with the University of Helsinki is currently focused on the Mesozoic Movene Basalt Formation (MBF) which is located in southern Mozambique.

The MBF represents the capping unit of the Gondwana breakup-related volcanic succession of the Lebombo monocline, southern Africa. The formation overlies and, in its lower part, is partly intercalated with rhyolites belonging to the Mbuluzi Formation. The bimodal nature of the formation is accentuated by the presence of intercalated rhyolites, known as the Sica beds (*Pequenos Libombos*) close to the top of the $\sim$2–3 km thick lava pile. Fully exposed cross-sections of individual flow units and flow contacts are sparse, but the lava pile seems to be composed of overlapping pahoehoe flow lobes that vary in thickness from $\sim$1 to $\sim$10 m.

Our preliminary geochemical data are broadly compatible with the previous conclusion that the basalts and the associated mafic dykes are subalkaline tholeiites with low-Ti affinities. Basalts with markedly high TiO_2, Zr, and Nb contents ($>$4 wt.%, $>$500 ppm, and $>$40 ppm, respectively) are found across the MBF, however. Based on incompatible element ratios, these high-Ti basalts show affinities to magma types typical of oceanic islands. Geochemical affinities and stratigraphic relationships make the high-Ti basalts of the MBF possible correlatives of Gondwana breakup-related high-Ti dolerite dykes from Dronning Maud Land, Antarctica, although supportive age data are still lacking.