

PETROLOGY AND GEOCHEMISTRY OF THE TAMATAVE DYKE SWARM (MADAGASCAR CRETACEOUS IGNEOUS PROVINCE)

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The late Cretaceous mafic dyke swarm intruding the crystalline basement in the Tamatave region (western Madagascar) is formed by basalts and basaltic andesites. The phenocrysts are plagioclase, augite, pigeonite, Fe-Ti-oxides, and apatite. The chemical trends indicate plagioclase and clinopyroxene removal (CaO, 11-9 wt%; TiO₂, 2-4 wt%; Fe₂O_{3t}, 12-17 wt%; P₂O₅, 0.2-1 wt%; Zr, 110-400 ppm; Nb, 5-20 ppm). The dykes have been divided into two groups according to abundance of some major and trace elements and their ratios. A small group of dykes has higher Nb/Y, Sr/Y, Zr/Y and Ti/V (0.55, 13, 10 and 50, respectively) than other dykes, with lower values of these ratios (0.3, 10, 5-8, and 30-40, respectively). The geochemical characteristics of the Tamatave dykes match those observed in the whole eastern coast, and, in particular, the dykes with lower Zr/Y are easily correlated with the dykes of Sainte Marie island, north of the investigated area (Melluso et al., 1999). On the other hand, the high Zr/Y ratios of some of the Tamatave dykes broadly match the values observed in the D group lava flows identified in the northwestern lava sequence (Melluso et al., 1997). Therefore, there is possibility of regional correlations between the rocks of the various sectors of this flood basalt province, that, seem to derive from distinctly different sources (Melluso et al., 1999).