

Whole-rock and mineral geochemistry of peridotites in Oecusse, Timor-Leste: Significance for the tectonic formation of Timor

J. J. PERCIVAL¹

¹School of Earth Sciences, University of Melbourne, 3010, Victoria, Australia
(jpercival@student.unimelb.edu.au)

The island of Timor lies just north of Australia within the Banda Arc. Current models describe Timor as part of the accretionary product of young arc-continent collision between the Asian and Australian plates. As such its geology consists of a mix of both plates in complex association. Ultramafic bodies can be found outcropping across Timor Island and have been attributed to either a supra-subduction zone (SSZ) ophiolitic or sub-continental lithospheric mantle origin. A lack of geochemical data, together with enigmatic structural field relationships, has led to controversy surrounding their origins and tectonic significance.

Peridotite bodies dispersed across the northern coast of Timor were successfully mapped and sampled during a 2015 field mapping season in Timor-Leste's exclave district of Oecusse. Primary objectives were to determine the relationship of the Oecusse ultramafic bodies with 1) other ultramafic bodies throughout the rest of Timor and 2) the Oecusse pillow volcanics thrust sheet. Further, the study aims to provide additional data in determining an environment of origin for these rocks.

Using a combination of structural, petrographic and geochemical analysis, this study presents a new wide-ranging dataset towards this goal. By comparing new bulk-rock and mineral major and minor element chemistry with previous studies, the geochemical expression of mantle processes in a convergent margin environment are explored.