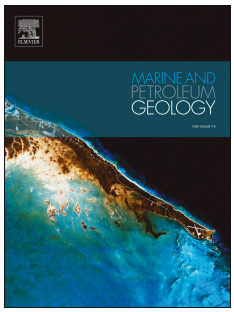
Accepted Manuscript



Genesis and evolution of the Watukosek fault system in the Lusi area (East Java)

Andrea Moscariello, Damien Do Couto, Fiammetta Mondino, Jacqueline Booth, Matteo Lupi, Adriano Mazzini

PII: S0264-8172(17)30382-3

DOI: 10.1016/j.marpetgeo.2017.09.032

Reference: JMPG 3090

To appear in: *Marine and Petroleum Geology*

Received Date: 31 January 2017

Revised Date: 17 September 2017

Accepted Date: 29 September 2017

Please cite this article as: Moscariello, A., Do Couto, D., Mondino, F., Booth, J., Lupi, M., Mazzini, A., Genesis and evolution of the Watukosek fault system in the Lusi area (East Java), *Marine and Petroleum Geology* (2017), doi: 10.1016/j.marpetgeo.2017.09.032.

Genesis and evolution of the Watukosek fault system in the Lusi area (East Java)

Andrea Moscariello (1), Damien Do Couto (1), Fiammetta Mondino (2), Jacqueline Booth (1) Matteo Lupi (1), Adriano Mazzini (3)

(1) Department of Earth Sciences, University of Geneva, 13 Rue des Maraichers, 1205 Geneva, Switzerland,

(2) Leon Gaud 5, 1206 Geneva

(3) Center of Earth Evolution and Dynamics, University of Oslo, Sem Sælandsvei 2A, 0371 Oslo, Norway

Abstract

Detailed analysis of two-dimensional seismic lines acquired in the NE Java basin has been performed to unravel the subsurface geology of the region around the Lusi mud eruption. This work revealed the existence of a system consisting of a complex set of faults, here called the Watukosek fault system, forming triangular deformation zones converging at the top of the early Miocene Carbonates. This system continues downwards with vertical individual fault segments, often bordering the steep margins of the carbonate platforms. The analysis of data includes the interpretation of seismic lines, regional structural data inferred from basement gravity maps and present-day main direction of stress. Results suggest that a possible rotation of stress direction from N40E-S40W to N-S occurred during the post-Miocene history of the Java back arc tectonic evolution. The Watukosek fault system was first generated as a