## Abstract

# Structural Styles of the West Sulawesi Deep-Water Fold and Thrust Belt, Makassar Straits, Indonesia

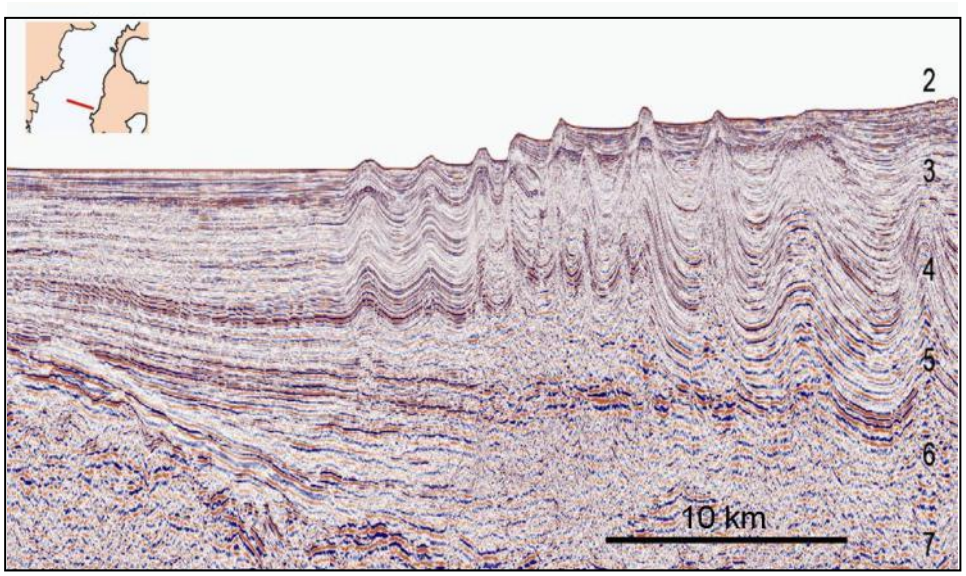
**Jose de Vera & Ken McClay**
*Fault Dynamics Research Group, Royal Holloway, University of London, Egham, United Kingdom*

The offshore margin of West Sulawesi (eastern Makassar Straits) is characterized by an active, Late Miocene/Early Pliocene to present day, NE-SW-trending and NW-verging deepwater fold and thrust belt. The fold and thrust is approximately 250 km long and as much as 75 km wide and consists of an Oligocene to present day succession that was deposited on subsiding, thinned, rifted continental crust and is now deformed by SW-to NE-verging thrust fault-related folds deformed on multiple detachment layers. Based on the across strike variations in structural style and bathymetry changes, the West Sulawesi fold and thrust belt can be divided into five across-strike main structural domains. From northwest to southeast these are: the abyssal plain, the deformation front, the folded domain, the thrust domain and the inversion domain. The abyssal plain is solely deformed by Pliocene to Pleistocene, low-displacement, planar extensional faults, which are interpreted to be the result of flexural subsidence ahead of the advancing thrust front. The structural styles of the deformation front are strongly controlled by inversion of the Pliocene to Pleistocene extensional faults. Inversion of pre-existing faults controls fault localization and fold vergence, giving rise to complex wedge and triangle zone geometries.

The structural styles of the folded and thrust domains are characterized by complex NW- to SE-trending detachment and fault-propagation folds, with multiple detachment levels developed in Oligocene and Miocene mudstones. The inversion domain is the innermost and oldest element of the thrust belt and consists of large anticlines that resulted from reactivation of Paleocene rift structures. The results presented in this work are based on the structural analysis of 3480 km of regional 2D seismic lines.

The structural patterns described here have implications for understanding fault-fold geometries and growth in other deepwater fold and thrust belts.

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**West Sulawesi fold belt, Source: from Baillie et al, 2005, documented in geoseismic-seasia.blogspot.com**