



Structural and Tectonic Complexity of the Phu Khan Basin on the Continental Margin of Vietnam, from Seismic Reflection and Gravity Studies.

I. D. Reid (1), L.O. Boldreel (1), M.B.W. Fyhn (1), L. D. Thang (2), L. H. Nielsen (3), N. T. Huyen (2), N. A. Duc (2), D. T. Hounq (2)

(1) Geological Institute, University of Copenhagen, Geocenter Copenhagen, Denmark.

(2) Vietnam Petroleum Institute (VPI), Hanoi, Vietnam

(3) Geological Survey of Denmark and Greenland, GEUS, Geocenter Copenhagen, Denmark.

The Phu Khan basin off eastern Vietnam of great significance for the tectonics of Southeast Asia, being the location of the sharpest and narrowest continent-ocean boundary between Asia and the South China Sea. The northern part of this basin is characterised by a strong gravity anomaly. Continental rifting began in the latest Mesozoic, and continued through the early Tertiary, as seafloor spreading in the proto-South China Sea was initiated in response to the complex interactions of the Indian, Eurasian, Philippine Pacific plates in this region. Deformation of Southeast Asia by the collision of the Indian continent resulted in modification of the rifted margin by strike-slip faulting and the formation of transtensional structures. Seismic reflection profiles, particularly in the northern part of the Phu Khan basin, display the complexity resulting from this multi-stage development of the basin. This complexity is confirmed by gravity modelling, which indicates a rapid thinning of the continental crust immediately beneath the basin, with the crust thickening again to seaward. Another zone of anomalously thin crust associated with graben structures in the eastern part of the basin. The narrow zone of thin crust is interpreted to be due to thinning by strike-slip or transtensional motion. Further analysis, including subsidence modelling, may provide important new constraints on the tectonic development of Southeast Asia and its interaction with the South China Sea.