



## **Regional Geodynamic Implications of the Structural Evolution of the Phu Khanh Basin, Offshore Central Vietnam, South China Sea, Based on Interpretation of Multichannel Reflection Seismic Profiles.**

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

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

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

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

(lob@geol.ku.dk)

The Phu Khanh Basin is one of the least explored basins in the South China Sea-region. Based on the interpretation of an open grid consisting of multichannel reflections seismic profiles 3 distinct rift-phases followed by a phase of tectonic quiescence and thermal subsidence are evidenced. The initial rift-phase commenced during the Paleogene and lasted until mid-Oligocene times and was probably forced by the slap-pull from the subduction of the proto-South China Sea underneath Borneo. The rift-phase ended due to onset of left-lateral movements in the coast-parallel East Vietnam Boundary Fault Zone (EVBZF) forced by the Indian-Eurasian collision and the related SE-wards extrusion of Indochina. The left-lateral movement resulted in the inversion of older structures and subsequently caused NW to NNW striking extensional structures to form. This second rift-phase ended at the turn of Paleogene due to a second phase of inversion, this time induced by moderate right-lateral strike-slip in the EVBZF. Right-lateral movements caused the formation of approximately N – S trending rift-structures of various kinds. The right-lateral wrenching in the Phu Khanh Basin is interpreted as part of a contemporary, more regional event observed across greater parts of the south Indochinese region. The event was probably forced by the onset of counter-clockwise rotation of the Malaysian and Indonesian region south of

the South China Sea. This third rift-phase culminated during earliest Miocene times and heralded the latest tectonic phase of the basin characterized by thermal subsidence and eastwards down-warping due to the late Neogene uplift of Central and South Vietnam farther west induced by regional Volcanism.