



Investigation of deformation front in Miaoli offshore area, Taiwan

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Taiwan is located in the collision zone between the Eurasia plate and the Philippine Sea plate. The Philippine Sea plate moves to northwest at a rate of 7 cm per year relative to the Eurasian plate resulting in forming a series of fold-and-thrust belts aligned in northeast-southwest direction. Westward compressive forces gave the younger or more active faults are located in the west. Scholars refer the west edge of fold and thrust belts as the location of so-called deformation front. To the north of the Sanyi-Puli Seismic Zone, it is believed the front goes to ocean floor and is located offshore of Miaoli and Hsinchu County.

Previous studies indicated that the deformation front follows the trace of Hsinchu fault extending offshore to the place where water depth at 35m. Beneath water layer, sediment strata were deformed compressively to imply its young occurrence. Accordingly, this study was proposed, we therefore believed that the trace of deformation front shall be turned southward and aligned offshore along the coastal line of Chunan-Houlong.

The tools to trace the deformation front offshore Chunan and Houlong are reflection seismic system, multi-beam echo sounder and side-scan sonar system in this study. Survey results indicate offshore deformation front appears along a reverse fault with 0.8° dipping angle southeastwards, and its trace extending from Hsinchu Fault to the deeper area over 50 meters depth. There is no evidence showing this outmost trace shall further turn south parallel with the coastal line as it was expected.