

A regional mylonite zone between the Mesozoic metamorphic basement and the subducted Miocene covered schists in eastern Range of Taiwan: A possible Plio-Pleistocene transform fault between Eurasia and the Philippine Sea plate

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As one of the youngest orogenic belts, Taiwan offers insights into mountain building processes operating from the Earth's surface. In the eastern Central Range of the Taiwan mountain belt, the Tananao metamorphic belt, comprising the Tailuko Belt, high temperature/low pressure Mesozoic basement, was attached by the Yuli belt, a Miocene pelitic quartz-mica schist with high-pressure exotic mafic to ultra-mafic blocks (Yen, 1960; Tsai et al., 2013). Observations of meso- and microscopic structures show predominant asymmetric folds with top-to-east S2/S3 on the eastern Yuli belt and isoclinal folds with west dipping S2 on the western Tailuko belt. In the boundary between these two geological rock units, we observed a mylonite zone distributed about 2 kilometers wide, which has been called the Shoufeng Fault, which indicated sinistral sense of shear and shallow stretching lineation within the mylonite zone. The structural style of other area is relatively irregular and disordered (Stanley et al., 1981; Lu and Wang Lee, 1986; Pulver et al., 2002; Ho, 2007; Liao, 2011; Ji, 2011). This pattern was found from north to south in a distance of 100 km along the Yuli belt along the Mugua, Shoufeng, Wanliqiao, and Chinshui Rivers to the Southern Cross island highway and the Dawushan map (Usami, 1940). The above observations pointed out an apparently down-dip folding coupled with a dominant orogen-parallel lineation pattern around the Shoufeng mylonite zone between the Miocene Yuli belt and the Mesozoic Tananao complex. It provides structural constraints on the deformation associated with ductile metamorphism of the high-pressure Yuli belt terrane while attached against the much older continental crust of the Tananao complex as well as during the subsequent rapid exhumation processes.

Keywords: Tananao metamorphic belt, mylonite zone, left-lateral strike slip motion