

Recognition of inferred active Fangshan transfer fault in Kaohsiung metropolitan area of SW Taiwan by geodetic measurement and SAR interferometry

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The major NNE-SSW trending fold-and-thrust belt in Taiwan orogeny resulted from the oblique collision between the Philippine Sea plate and Eurasian plate. Due to the differential movement of thrust sheets, several NW-SE trending transfer faults were recognized by multisource approaches, such as geomorphological features from high resolution DEM, drainage network anomalies, aerial photographs, SLAR images, SPOT and Landsat images. The southernmost Fangshan transfer fault is located in Kaohsiung metropolitan area which had been categorized as an active by Central Geological Survey in 2000. However this fault is eliminated on the list of active faults in 2010. In this study, we first use the dense GPS network in SW Taiwan to investigate the Fangshan transfer fault by decomposition of GPS velocity field into fault-normal and fault-parallel components. The GPS suggest that the Fangshan transfer fault is a left-lateral fault zone with thrust component accommodating the westward differential motion of thrust sheets on both side of the fault. In addition, the linear pattern of PS-INSAR with significant gradient of LOS rate across the fault suggest that the Fangshan transfer fault is still active. From background seismicity, the shallow events and seismicity are not frequent in the surrounding area of the Fangshan fault, thus the accommodation of deformation is probably aseismic.

Keywords: GNSS, InSAR, Active Fault