

A Study of the Deformation and Kinematic Characteristics of the Sanyi Thrust Fault by Incorporating the Outcrop Analysis and Resistivity Imaging Results

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For the purposes of hazard mitigation in metropolitan area, it is very important to map the fault trace in order to delineate the susceptibility zones of the active faults. In this study, we focused on the outcrop analysis and near surface resistivity mapping of the fault traces of the Sanyi thrust fault. From the outcrop along the Dajia river, we studied the kinematics and deformation characteristics of the Sanyi fault. The Kweichulin formation forms the hanging wall of the Sanyi Fault and the footwall is composed of the unconsolidated gravels and sands in the study area. We observed that the Sanyi Fault is composed of a major and three minor fault zones. The major fault zone extends about 100 meters, and is consisted of 1.5-m thick fault gouges and breccias. We also conducted electrical resistivity imaging near the outcrop and sites with drilling records. Compared with the data and inverted resistivity images, we concluded that the Kweichulin formation in the hanging wall exhibits a resistivity lower than 100 Ohm-m and the thick gravel layers in the foot wall have a resistivity higher than 100 Ohm-m. With the results we may quick differentiate the hanging wall from the footwall in the area, and to search the possible locations of the fault trace between the hanging wall and footwall. Our study shows the fault trace may pass through the east side of the Fengyuan township, and extends southeastward into the area that between the hill and the alluvial plain of Taichung Basin.

Keywords: Sanyi Fault, resistivity imaging, outcrop