



## **Detecting Taiwan's Shanchiao Active Fault Using AMT and Gravity Methods**

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Taiwan's Shanchiao normal fault runs in a northeast-southwest direction and is located on the western edge of the Taipei Basin in northern Taiwan. The overburden of the fault is late Quaternary sediment with a thickness of approximately a few tenths of a meter to several hundred meters. No detailed studies of the western side of the Shanchiao fault are available. As Taiwan is located on the Neotectonic Belt in the western Pacific, detecting active faults near the Taipei metropolitan area will provide necessary information for further disaster prevention. It is the responsibility of geologists and geophysicists in Taiwan to perform this task.

Examination of the resistivity and density contrasts of subsurface layers permits a mapping of the Shanchiao fault and the deformed Tertiary strata of the Taipei Basin. The audio-frequency magnetotelluric (AMT) method and gravity method were chosen for this study. Significant resistivity and gravity anomalies were observed in the suspected fault zone. The interpretation reveals a good correlation between the features of the Shanchiao fault and resistivity and density distribution at depth. In this observation, AMT and gravity methods provide a viable means for mapping the Shanchiao fault position and studying its features associated with the subsidence of the western side of the Taipei Basin. This study indicates the AMT and gravity methods' considerable potential for accurately mapping an active fault.