

## Imaging the subsurface fault systems with the magnetotelluric surveys in the southern Ilan plain of NE Taiwan

\*Ping-Yu Chang<sup>1</sup>

1. National Central University

The high sedimentation rates as well as the frequent human activities have caused the difficulties in mapping the surface traces of the active faults in most of the populated areas of Taiwan. The basement topography of the sedimentary basin, on the other hand, should show the direct results of fault movements and is free from the sedimentary effects. Therefore in the study we attempt to use the magnetotelluric(MT) surveys to delineate the basement topography of the southern Ilan plain, which is consisted of Tertiary metamorphic rocks such as Argillites and Slates. The recent extension of the Okinawa Trough starting from approximately 0.1 Ma involved ENE- and WSW-trending normal faults in the Ilan plain. The plain is therefore thought to be a subsidence basin bounded by the Hsueshan Range in the north and the Central Range in the south. We deployed over 70 MT stations across the plain and tried to map the relief variations of the basement with the inverted resistivity images, since the saturated sediments are relatively conductive and the consolidated rocks are resistive. We found that there are a series of N-S trending horsts and grabens in addition to the pre-existing ENE-WSW normal fault systems in the inverted MT profiles. The preliminary results suggest that a younger N-S trending normal fault system may modify the relief of the basement in the recent stage. The findings of the MT resistivity images provide new information to further review the tectonic explanations of the region in the future.

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