

## Structure and Motion of the Southwestern Taiwan Fold and Thrust Belt

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### ABSTRACT

Surface and limited seismic data have been used to construct new cross sections across the southwestern Taiwan Fold and Thrust Belt. South of Chiayi, the best fit to the data is achieved if the detachment lies at a depth of 10 to 12 km, stepping up to about 6 km to the west. The Chukou fault and its extension to the south (Lunhou fault) are not the frontal structures in this area. Available data indicate the frontal structure may be composed of incipient reactivated normal faults in the north and triangle zones in the south. Published leveling data show that, whatever the structure, it is growing.

From north of Chiayi to the south the salient nature of the structures of the Foothills province include: 1) a considerable amount of pre-Miocene strata are involved in the deformation. The involvement of pre-Miocene decreases to the south, but the depth of the basal detachment does not change due to the thickening of the Miocene and younger section; 2) the involvement of pre-existing normal faults and consequent 'basement' highs affecting the trajectory of thrust ramps abruptly ends south of Chiayi, separated by buried transverse faults from, 3) the thick foreland synorogenic stratigraphic sequence rides passively above the duplex wedge. Current seismicity appears to have no correlation to the interpreted locations of faults, whether thrust, normal or strike-slip.

Preliminary GPS data from this portion of the fold and thrust belt indicates, as first shown by Yu and Chen (1994), that structures are generally moving westward with respect to the Chinese craton. However, our data show abrupt changes in horizontal velocity, not all of which are associated with mapped faults. There is a region of high horizontal velocity and strain rate to the east of the Chukou-Lunhou fault. On a finer scale, the velocities

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