

台南台地的地表變形與地震潛能

Surface Deformation and Earthquake Potential of Tainan Tableland, Southwestern Taiwan

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ABSTRACT

We use repeated GPS and precise leveling measurements on the Tainan Tableland, southwestern Taiwan to characterize the behavior of the faults at depth and thus contribute to a better understanding of earthquake potential in this region. Analyses of GPS campaign data set from 1999 to 2003, together with data recorded at eight continuous GPS sites in the surrounding regions indicate a horizontal movement of 12 ± 4 mm/yr in the direction of $N44^\circ W$ for the Tainan Tableland with respect to TN01 on the west coast. Comparison of five precise leveling surveys across the Tainan Tableland over a period of 2 years indicates an uplift rate of about 11 mm/yr for benchmarks on the Tableland. Using an elastic dislocation model, we obtained a rapid slip rate of 23 mm/yr on the east-dipping Tainan fault and a relatively slow slip rate of 7 mm/yr on the west-dipping Houchiali fault. Using an empirical relation between rupture area and earthquake magnitude, we estimate a single segment Mw 5.9 and Mw 5.6 earthquakes could take place on the Tainan fault and

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