



A study of the Chingshui geothermal area from seismic tomography and other geophysical results

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In this study, we obtained seismic tomography results of the area beneath the Chingshui geothermal field, which is the largest existing productive geothermal area in Taiwan. We imaged the V_p and V_p/V_s anomalies using over 600 local microearthquakes recorded by the temporary seismic network surround the area and the records from Center Weather Bureau Seismic Network (CWBSN). The microearthquakes beneath the Chingshui geothermal area are all negative magnitude with depth of 3 to 6 km, improving the shallower tomographic images which could be compared with other near-surface geophysics results. Comparing to the magnetotelluric and gravity results, most of the microearthquakes are bounded by C-fault and Xiaonanao fault inferred as the geothermal reservoir from the previous studies. The microearthquakes lie on a high V_p/V_s zone, which is in between depth of 6 to 12 km correlating with a low resistivity zone inferred as a possible source reservoir. This suggests that the feeding high temperature fluid from the deeper source reservoir into the upper geothermal reservoir causes the fracture permeability with microearthquakes.

Keywords: Taiwan; Chingshui geothermal field; Microearthquake