



Subsurface structure of the geothermal well site in Ilan, Taiwan by using the seismic exploration method

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Geothermal energy could be a feasible way to reconcile the energy needs of a growing population and economic development. Several studies have shown that the Ilan area is a significantly potential area for developing the geothermal energy in Taiwan. However, since the Ilan Plain is covered by the thick Quaternary sediments, the previous studies of the subsurface structure in this area are mostly at a large-scale. The purpose of this study is to find an appropriate drilling site for the geothermal well in Ilan by using the seismic exploration method. We cooperated with the seismic survey team from National Central University again, used the two vibrators (EnviroVibe) along with a 432-channel seismograph to conduct more seismic surveys in the Ilan area. Since we have collected more 2-D seismic sections in the different directions to sketch the structures underneath, we are now able to describe the geometry of the subsurface structures in three dimensions. The seismic profiles showed that the sediments are thickened to the east, and the bedding planes are dominantly dipping to the northeast and slightly tilted. As we have known the Ilan area is located in a tectonic divergent area, the major fault system passing through this area may result in a derivative structure, and provide the channels for inflow of the hot water to produce geothermal power. Currently, we have construct a 3D model of the subsurface structure, and is waiting for the evidence from core boring to examine the accuracy of the interpretation.