Constraint of magnetic models using seismic tomography in Taiwan

*Chieh-Hung Chen¹, Chun-Rong Chen², Strong Wen³, Yi-Hsuan Huang¹

1. Department of Earth and Environmental Sciences, National Chung Cheng University, Taiwan, 2. Department of Earth Sciences, National Central University, Taiwan, 3. National Center for Research on Earthquake Engineering, Taiwan

Uncertainty is often one of the sufferings when underlying structure models are constructed by using unitary geophysical data retrieved from field survey. Velocity-susceptibility models are constructed using velocity retrieved from seismic tomography transferring into susceptibility through characteristics of minerals and/or rocks determined by (Vp) together with (Vp/Vs ratio). Simulated values are computed from the models through 2D forward methods to compare with magnetic anomalies processed after field prospection. Two profiles with intense undulation of geomagnetic anomalies over sediment areas in central-west Taiwan and complex geological structures at the rim of the subduction zone in north Taiwan are used to examine consistency between the simulated values and magnetic anomalies. The consistent results suggest that rocks with high susceptibility can be identified in sediment areas and complex geological areas by using velocity tomography. Those models with two-parameter constraints shed light on understanding underlying magnetic structures through more confidence.

Keywords: Magnetic anomaly, Velocity tomography, Magnetic susceptibility