

3-D magnetic imaging of Taiwan region

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Taiwan is located in a collision area of the Eurasian Plate and the Philippine Sea Plate. To understand the geological structure of Taiwan, we construct a 3-D magnetic tomography underlying around the Taiwan region (21.8° N–25.3° N and 120.0° E–122.0° E). The region was divided into 55×28×10 grids with a grid size of 7×7×5 km³ from surface to 50 km in depth. The island-wide magnetic anomaly data were used to constrain magnetic induction field from the magnetization of each grid by using a conventional inversion method. The L-curve criterion was used to determine the distribution in depth of high-level magnetization. The inversion results show that materials with high-level magnetization is located beneath the Kuan-Yin, Pei-Kang, the Southern end of the Central Mountain Range, the southwestern of Taiwan, and the eastern margin of Taiwan. The depth of high-level magnetization ranges from 5 km to 35 km. The bottom of magnetic materials is generally thought to be an isothermal surface of the Curie temperature. We considered that the Curie isothermal surface around the Taiwan region is ranged between 10 km and 35 km in depth.

Keywords: Taiwan, Magnetization inversion, Magnetic anomaly