

## Locating earthquakes using magnetic data via the magnetic transfer function in Taiwan

Chieh-Hung Chen<sup>1\*</sup>, Han-Lun Hsu<sup>2</sup>, Strong Wen<sup>3</sup>, Chung-Ho Wang<sup>1</sup>

<sup>1</sup>Institute of Earth Sciences, Academia Sinica, Taipei 115, Taiwan, <sup>2</sup>Institute of Geophysics, National Central University, Zhongli 320, Taiwan, <sup>3</sup>National Center for Research on Earthquake Engineering, Taipei 106, Taiwan

Magnetic data have been widely utilized to survey direction of high-conductivity materials via the magnetic transfer function. Many studies have reported that conductivity of rocks close to epicenters is increased before earthquakes due to stress accumulation. Here, magnetic data are utilized to investigate location in which conductivity is enhanced during earthquakes in Taiwan. Analytical results show that anomaly increased conductivity appears about 30 days prior to M5 earthquakes in Taiwan. Directions determined through the anomalous increased conductivity via the magnetic transfer function well agree with earthquake azimuths to one magnetic station when effects of tectonic structure and sea water on magnetic data are mitigated. Earthquake epicenters can be further determined by using an intersection of anomalous directions determined by two or more magnetic stations. Meanwhile, depths of forthcoming earthquakes can be roughly estimated when the skin effect is conducted into the magnetic transfer function.

Keywords: Seismo-electromagnetic anomaly, Magnetic transfer function