

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

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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.

キーワード: Seismo-electromagnetic anomaly, Magnetic transfer function

Keywords: Seismo-electromagnetic anomaly, Magnetic transfer function