

Earthquake Precursor Signal Application in Epicenter Spatial Analysis

Chun-Hsiang Chan (1), Tzu-How Chu (2), and Proty Jiun-Huei Wu (3)

(1) Department of Geography, National Taiwan University, Taiwan (d04228002@ntu.edu.tw), (2) Department of Geography, National Taiwan University, Taiwan (gis127@ntu.edu.tw), (3) Department of Physics, National Taiwan University, Taiwan (jhpw@phys.ntu.edu.tw)

Among various disasters in the world, earthquake disaster always destroys lots of properties and lives immediately, however, it is difficult to know the epicenter, magnitude and time information beforehand. This study combines historical earthquake databases and MDCB ultra low frequency electromagnetic monitoring system databases to extract abnormal signals in frequency domain by different stations cross analysis, in addition, this study imports earthquake occurrence probability concept to estimate epicenter potential which can raise the accuracy of signal detection. In order to purify signal data, this study refers 17 types of weather factors to validate signal among earthquake, abnormal signal and weather factors. Moreover, sensor detection test has been considered because this step is necessary for progress and development of earthquake precursor research. Nevertheless, this study constructs signal validation model, spatial sensitivity analysis and historical earthquake hot spot analysis into epicenter estimation model to compute the probability of earthquake location, and these results shall provide to Central Weather Bureau as reference for earthquake disaster prevention in the future.

Keyword: Ultra Low Frequency Electromagnetic Wave, Signal Analysis, Spatial Hot Spot Analysis