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Earthquake forecasting using a smoothing Kernel and the rate-and-state friction law: Application to Taiwan

Earthquake forecasting using a smoothing Kernel and the rate-and-state friction law: Application to Taiwan

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In this work, two approaches were employed for estimating the spatio-temporal distribution of the seismicity density in Taiwan. A long-term forecasting model that involves a smoothing Kernel function is proposed. By way of the rate-and-state friction law, another model for short-term forecasting according to the fault-interaction-based rate disturbance due to seismicity was considered. The application of the models to Taiwan led to good agreement between the models forecast and actual observations. Using an integration of the two approaches, the integrated method was found to be capable of providing a seismicity forecast with a higher accuracy and reliability. The proposed methodology, with verified applicability for seismicity forecasts, could be useful for seismic hazard analyses.

キーワード: earthquake forecasting, smoothing Kernel function, Coulomb stress change, rate-and-state friction law, Taiwan
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