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フラクタル解析によって推定された、微動活動の時間的な活動特性の空間変化
Spatial variations of the temporal clustering properties of tectonic tremor activities inferred from a fractal analysis

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The spatial variation of tremor activities is characterized by means of a fractal analysis. The temporal distribution of tremor activity exhibits fractal behavior, and its fractal dimension (D) and the characteristic time (t_c) reflect the degree of temporal clustering and the recurrence interval of episodic tremors. By applying one-dimensional box-counting method for the tremor catalogs from the following tectonic regions: Nankai, Cascadia, Mexico, and New Zealand, we identify transitions of the temporal clustering properties in both the dip and the strike directions. A transition in the dip direction is possibly associated with the change in the thermal condition depending on the tremor depths, while significant variations in the strike direction is likely to be affected by other factors such as pore-fluid pressure and geometrical irregularities, as well as local temperature variations. The characteristic time has modest positive correlation with the tremor duration, probably representing the inherent correlation between the seismic moment release rate and the recurrence interval of tremors controlled by the frictional properties along the plate interface.

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