SSS01-08　　　　　　　会場:102B　　　　　　　　時間:5 月 24 日 16:15-16:30

Detecting spatial variations of earthquake clustering parameters via maximum weighted likelihoods estimates

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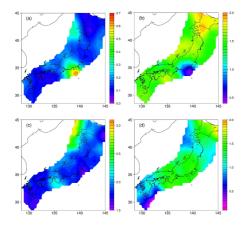[1]Institute of Statistical Mathematics

The ETAS model has been used to describe the clustering features of seismicity with just several parameters. To see how the clustering parameters and background rates change spatially, in this study, the earthquake data from the JMA catalog are used and these model parameters are estimated by using the maximum weighted likelihood estimate (MWLE) method. Even though this MWLE method is not as sophisticated as the HIST-ETAS model, which is built on a more rigorous basis of the Bayesian procedure with the smoothness prior, MWLE is simpler to implement, in both parallel and non-parallel computing environments, without loss of detecting resolution of the spatial variation of earthquake clustering parameters.

The data analysis shows that the spatial variation of the MWLEs of each parameter shows different features between tectonic regions. Also, applying the MWLE method has the potentials for improving the forecasting performance of the space-time ETAS model in evaluating earthquake probabilities.

Figure 1: Spatial variations of the ETAS parameters estimated by using maximum weighted likelihood estimate (MWLE). (a) A, (b) α, (c) q, (d) γ.

キーワード: ETAS モデル, 地震クラスタ, 地震予測, 最大重み付き尤度推定値
Keywords: ETAS model, earthquake cluster, earthquake forecasting, weight likelihood estimator