

SUBSAMPLING A RANDOM FIELD

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ABSTRACT

Subsampling techniques developed by Hartigan (for independent observations) and by Carlstein (for mixing processes on the integers) are extended to estimate variances and covariances of statistics of spatial processes.

If the process is stationary, and dependence weakens rapidly with increasing distance, then the procedure is consistent in the sense that, as the region available for observation grows large, both the bias and the variance, of the estimator of the second moments, converge to zero.

The technique is applied to estimate the variance of the sample intensity of a binary Markov random field, and the variance of an index of clumping for spatial point processes studied by quadrat methods.

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