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12. Probability and Statistics

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Distances for multivariate spatial data analysis.

Many techniques of multivariate statistical analysis require a distance between sampled vectors, but none takes into account the case in which samples are obtained from a realization of a spatial correlated random field. Examples of this are found in frameworks such as geostatistics or epidemiology in which individuals are characterized by a random vector plus non-random spatial coordinates. A model, defined as the sum of a spatial autocorrelated random field, white noise and a random vector whose spatial autocovariance matrix is constant for any lag, and its associated distances, is introduced as a first step towards the development of appropriate statistical techniques for the analysis of multivariate spatial data.