Review of model evaluation techniques for space-time point processes

F. P. Schoenberg[1]

[1] *UCLA Statistics, 8125 Math-Science Building, Los Angeles, CA 90095-1554, USA.*

Abstract. *Spatial-temporal point process models are typically assessed using numerical summaries based on likelihoods or other scores which tend to have serious limitations. For instance, Models for forecasting earthquakes are currently tested prospectively, and the extent to which these models agree with the data is typically assessed using a variety of numerical tests, which unfortunately have low power and may be misleading for model comparison purposes. Promising alternatives exist, especially residual methods such as super-thinning, deviance residuals, and Voronoi residuals. We review some of these tests and residual methods for determining the goodness of fit of earthquake forecasting models.*

Keywords. *Earthquakes; Goodness-of-fit testing; Model assessment; Point processes; Residual analysis.*

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