

AUTOLOGISTIC SPATIAL-TEMPORAL MODELING

by

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ABSTRACT

We postulate a combination of spatial-temporal and autologistic model in modeling a binary data collected over time and space. A second-order neighborhood system is used in the definition of the spatial component of the model. The backfitting algorithm is then used in estimating the model.

As the proportion of success and failure responses becomes balanced, sensitivity and specificity increases. The predictive ability of the model is fairly robust to the spatial parameter but is significantly influenced by the temporal parameter. The bias of the estimate for the spatial parameter declines as it becomes dominant into the model. Furthermore, as the autocorrelation becomes stronger, its estimate becomes less biased. The backfitting algorithm converges fast in the estimation of the spatial-temporal autologistic model.

Keywords: *binary response, autologistic model, spatial-temporal model, backfitting*