Mixture Spatio-Temporal Modelling using Biological Population Data

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This work is aim to address the inference problem in time and space of heterogeneous and highly variable biological populations data series. Here data heterogeneity is naturally treated as derived by alternative processes formulating a mixture spatio-temporal one. Mixture spatio-temporal models are then estimated using Gaussian Maximum Likelihood Estimation (GMLE) via EM-algorithm. Then, using pre-whitening which is based on the Innovation Algorithm, we manage to compute the cumbersome GMLE for the spatial covariance parameters which can not be derived in a standard closed-form solution. The present method is then applied to Canadian mink-muskrat and Hokkaido vole data.