Data on Nested Grids for Parameter Estimation of a Spatial Gompertz Diffusion

R. Gutiérrez[1], C. Roldán[2], R. Gutiérrez-Sánchez[1] and J.M. Angulo[1]

[1] Department of Statistics and Operations Research. University of Granada Campus de Fuentenueva, s/n, E-18071 Granada, Spain

[2] Department of Statistics and Operations Research. University of Jaén Las Lagunillas, s/n, E-23071 Jaén, Spain

Abstract: This paper evaluates the effects of using data observed on regular nested grids on the parameter estimates of a two-parameter Gompertz diffusion model. Firstly, the spatial Gompertz diffusion is introduced through an appropriate transformation of a Gaussian diffusion random field. Secondly, a non-homogeneous version, involving exogenous factors affecting the drift term, is considered for obtaining the parameter estimates; the explicit expression of the likelihood equations and the parameter estimators are given for regular grids. Finally, a simulation experiment illustrates the results of this paper.