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## Urban Growth Modelling Using Determinism and Stochasticity in a Touristic Village in Western Greece

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### ABSTRACT

Urban development has acquired an important magnitude in touristic places in Greece. Many villages, especially in seaside areas have adapted to touristic requirements by the necessary infrastructures and activities. Pogonia, located in Vonitsa Etoloakarnanias, is a village which has welcomed the opportunity of touristic development. As a result, the house settlements increased 57.5% during the last 8 years. Urban growth modelling using Artificial Neural Networks (ANNs) was applied in order to simulate the urban development in Pogonia village using two methods: determinism and stochasticity. The variables used for deterministic simulation were: distances to roads, urban areas and coastline, slope and elevation. It was found that urban development can be better described using the network of distances between all urban settlements (stochastic approach) rather than using determinism. This can be explained by the importance of the neighbourhood relationships and the interaction between urban settlements, occurred within the interconnected network of the self-organized urban system.

### KEYWORDS

Urban Growth Modelling; Determinism; Stochasticity; Pogonia; Artificial Neural Network; Chaos Theory

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