

Urban Growth Prediction Using Artificial Neural Networks in Athens, Greece

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Abstract : Urban areas have been expanded throughout the globe. Monitoring and modeling urban growth have become a necessity for a sustainable urban planning and decision making. Urban prediction models are important tools for analyzing the causes and consequences of urban land use dynamics. The objective of this research paper is to analyze and model the urban change, which has been occurred from 1990 to 2000 using CORINE land cover maps. The model was developed using drivers of urban changes (such as road distance, slope, etc.) under an Artificial Neural Network modeling approach. Validation was achieved using a prediction map for 2006 which was compared with a real map of Urban Atlas of 2006. The accuracy produced a Kappa index of agreement of 0,639 and a value of Cramer's V of 0,648. These encouraging results indicate the importance of the developed urban growth prediction model which using a set of available common biophysical drivers could serve as a management tool for the assessment of urban change.

Keywords : artificial neural networks, CORINE, urban atlas, urban growth prediction

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