Computers and Electronics in Agriculture
Volume 81, February 2012, Pages 87-96

Artificial Intelligence in modelling the complexity of Mediterranean landscape transformations

Fivos Papadimitriou

Show more

https://doi.org/10.1016/j.compag.2011.11.009

Abstract

In this paper, it is shown how a system can be created by using methods of Artificial Intelligence, designated (a) to provide the user with information about the transformations of Mediterranean-type landscapes in an interactive way, (b) to allow the modelling of causes and effects of landscape transformations (such as land degradation) and (c) to forecast future landscape changes. The system consists of programs, which run independently. Each module performs a certain task only and contributes to the modelling of landscape transformations in a different way. The modelling approach results in reducing the semantic complexity of landscape transformations, while this model can be understood by both humans and machines. The output consists in linguistic descriptions of the landscape or landscape properties, along with quantitative descriptions. For instance, the system can reason what have been the possible causes of certain landscape transformations if certain ecological effects are observed on the face of the landscape and reversely, what are the expected ecological results if certain causes of landscape change are given.

Highlights

▸ Landscape transformations are modelled using Artificial Intelligence language. ▸ Artificial Intelligence can be used to simulate landscape transformations. ▸ Causes and effects of Mediterranean landscape transformations can be modelled. ▸ Future landscape states can be predicted as well as land degradation status.

Previous Next

Keywords

Artificial Intelligence; Mediterranean landscapes; Landscape complexity; Landscape modelling; Prolog; Greece

Recommended articles Citing articles (16)