



Journal

Journal of Land Use Science >

Volume 8, 2013 - Issue 2

103 | 10

Views

CrossRef citations to date

3

Altmetric

Short Communications

Mathematical modelling of land use and landscape complexity with ultrametric topology

Fivos Papadimitriou 

Pages 234-254 | Received 15 Jan 2011, Accepted 28 Oct 2011, Published online: 07 Dec 2011

 Download citation  <https://doi.org/10.1080/1747423X.2011.637136>

Abstract

Three new measures of functional/hierarchical landscape complexity are proposed in this article, based on ultrametric distances, and they are applicable to both raster and vector landscape maps: (a) C = the sum of ultrametric distances (and the associated measure $C1$ = the normalized sum of ultrametric distances), (b) Cd = the sum of degrees of land use functions and (c) Cy = the cyclomatic complexity of the graph of the ultrametric distances of the model. Each one of these measures provides different assessments of functional landscape complexity. With the measures C and Cd , we can also assess the relative significance of each landscape function for the overall landscape functional complexity. Assessing the 'decomposability' of the landscape system is also possible, allowing us to decide which landscape functions are more important than others. All these measures can be calculated for any landscape.

Example applications are made on a landscape from the area of Messogia, Attica (Greece).

Keywords: [landscape complexity](#), [land use complexity](#), [ultrametric](#), [landscape functions](#), [decomposability](#), [topology](#), [Attica](#)

- [Log in](#)
- [Shibboleth](#)
- [OpenAthens](#)

Restore content access

- [Restore content access for purchases made as guest](#)

Purchase *

[Save for later](#)

Online

Article Purchase

24 hours to view or download: USD 50.00

 [Add to cart](#)

Issue Purchase

30 days to view or download: USD 146.00

 [Add to cart](#)

* Local tax will be added as applicable

People also read

Article

The Algorithmic Complexity of Landscapes >

Fivos Papadimitriou

Landscape Research
Volume 37, 2012 - Issue 5

Published online: 22 Oct 2012



Information for

[Authors](#)[Editors](#)[Librarians](#)[Societies](#)

Open access

[Overview](#)[Open journals](#)[Open Select](#)[Cogent OA](#)

Help and info

[Help & contact](#)[Newsroom](#)[Commercial services](#)

Connect with Taylor & Francis

Get the latest news and offers tailored to you.

[Sign me up](#)

Copyright © 2018 Informa UK Limited

[Privacy policy & cookies](#)[Terms & conditions](#)[Accessibility](#)

Registered in England & Wales No. 3099067
5 Howick Place | London | SW1P 1WG