**Earth System
Dynamics
Discussions**

Interactive comment on "Urbanization susceptibility maps: a dynamic spatial decision support system for sustainable land use" by M. Cerreta and P. De Toro

Anonymous Referee #1

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General Comments: Review of the paper "Urbanization susceptibility maps: a dynamic spatial decision support system for sustainable land use" by M. Cerreta and P. De Toro.

The paper is very interesting and covers a binding issue on landscape planning science. I appreciated the background analysis mainly focused on theoretical as well also on regulatory aspects related to the issue of land consumption. Moreover, proposed indexes and indicators on which to base a dynamical analysis of urbanisation process are very helpful for both planners and decision makers. My general impression on the article is very positive and I consider it ready to publish after some minor revisions that I further specified in my comments.

Regarding my general comments on the paper I would just like to express a few concerns. Firstly, I do not agree with the Authors regarding the use of lemma "susceptibility" recurrent in the paper starting from its title. I strongly recommend to the Authors to consider replacing it with the lemma "suitability". Likewise, I suggest to replace the term "susceptibilities" with "suitabilities". This recommendation relates all the occurrences in the paper. Secondly, generally speaking I consider the methodological section clear and well-written. More in detail, I agree with the Authors about indexes and scores adopted, except for two cases in relation to which I have some doubt. With reference to table 1 ("Hierarchical structure of criteria and indicators for urbanization process"), I ask the Authors to explain why they made their choice for the following two indicators. Why the 'Olive grove' class has a score of 0 while that for 'Tree cultivation and olive grove' class is 1? Otherwise, I suggest adopting the same score for these land use classes that seem to have the same degree of suitability for urbanisation. In case of criteria for Natural Park, I suggest to adopt the score of 0 instead of 1 for 'zones in the Park'. Differently, how the Authors justify new urbanisation in a natural park? Thirdly, I agree with the Handling Editor in asking the Authors to provide some more information on geodata utilised in the model implementation.

Specific comments - Line by line comments of various degrees of importance: p. 1161 – L 5-6: please re-examine the following sentence "...value of soil, which is not recognized as a limited and non-renewable resource" considering that actually, although in a long term, the soil is a renewable resource. Indeed, as authors further highlighted in the text there are irreversible processes conducing in a permanent loss of soil. For example, we register a permanent loss of soil in case of transformation of former land uses in an urban one. p. 1161 – L 13: also in this line, please take into account what I noticed before. p. 1161 – L 16: please eliminate the word 'landscape" considering that with reference to the scientific literature following the European Landscape Convention (ELC), the soil is part of the landscape. Moreover, I suggest to eliminate the word 'heritage'.

p. 1164 – L 15-16: I ask the Authors to specify what they mean with the term "green infrastructures" considering its different meanings in Europe and USA, also differentiated depending on the followed approach. I suggest to provide this additional information, also taking into account the recent work of EEA (European Environment Agency): "Green infrastructure and territorial cohesion. The concept of green infrastructure and its integration into policies using monitoring systems" (available at http://www.eea.europa.eu/publications/green-infrastructure-and-territorial-cohesion).

p. 1172 – L 1: I suggest to the Authors to specify that the suitability analysis methodology was implemented using a raster approach. Similarly, I suggest to provide the geometric resolution adopted in doing this.

p. 1173 – L 2: also in this sentence please consider what I stressed for p. 1161 – L 5-6.

Technical corrections: - I suggest to provide a map containing a geographical location of the study-area. - In figures 1 to 4, scale bar and sometimes legends are missing. Please add these technical elements in all maps. - I think that the layout of fig. 1 is not clear. I suggest to reconsider it in order to better showing the hierarchical structure in which the geology layer belongs to the second level while the other belong to the third (not the first as reported). Moreover, there is a wrong legend for map c that represents 'Seismic zoning' and not 'Slopes stability' as erroneously reported. - References section: when available, I think it would be better if the Authors should add DOI to the references.