

Interactive comment on “Spatio-temporal analysis of the urban-rural gradient structure: an application in a Mediterranean mountainous landscape (Serra San Bruno, Italy)” by G. Modica et al.

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This manuscript describes a particularly innovative and interesting approach to the evaluation of Land Use/Land Cover (LULC) changes, with particular attention to control the effects of transformation on ecosystem functionality through a spatio-temporal analysis. According to the most recent studies and researches on European landscapes, the paper explores how the different phenomena (urban growth, sprawl, agricultural intensification, agricultural abandonment, etc.) can affect ecosystems' structure and their functionality, determining negative effects on the landscape, like fragmentation

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or homogeneity. In order to identify suitable approaches for a sustainable landscape planning, the evaluation of Land Use/Land Cover (LULC) changes is well investigated as well as the reference to the recent literature regarding the implementation of spatial and temporal analysis approaches, each characterized by a multi-methodological framework, where GIS tools are essential. In particular, the paper analyses Land Use/Land Cover (LULC) transformations in the municipality of Serra San Bruno in Calabria Region, in the South of Italy in order to consider an area representative of the Mediterranean mountainous landscape. The landscape changes in the study area have been examined considering the main relationships between urban-rural gradient, landscape metrics, demographic and physical variables, and investigating the evolution of urban-rural gradient composition and configuration of landscape changes. Indeed, the authors have structured a relevant evaluation process related to the implementation of an original approach to landscape conservation and valorization, with specific attention to the role of urban-rural gradient structure. The different typologies of LULC analysis can support the evaluation of landscape dynamics, considering the complexity of a continuous process, introducing the implementation of a spatial decision-support system replicable to other similar assessments, where the temporal dimension is a fundamental component. The paper is well-written and the methodological approach implemented is particularly relevant in a wider and current debate on the landscape issues. The perspectives opened by the study can improve the landscape assessment both in scientific and operative field, taking into account of different spatial techniques and a specific selection of indicators.

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