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Authors: M. Hilal, D. Joly, D. Roy, G. Vuidel

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Visual structure of landscapes seen from built environment

M. Hilal[1, a], D. Joly[2, a], D. Roy[2], G. Vuidel[2]

[1] CESAER, AgroSup Dijon, INRA, Université Bourgogne Franche-Comté, F-21000 Dijon, France
e-mail : mohamed.hilal@inra.fr

[2] Laboratoire ThéMA, UMR 6049 CNRS et Université Bourgogne Franche-Comté, F-25030 Besançon, France
e-mail : {daniel.joly ; damien.Roy ; gilles.vuidel} @univ-fcomte.fr

[a] These authors contributed equally

Highlights

- The visual structure of landscapes seen from built environment is analyzed.
- A GIS based-method identify landscape features, by combining a DEM and a land-use layer.
- The viewshed is described from high and low-density building areas.
- Trees, grassy areas and bushes are dominant in the high-density building areas.
- The landscape from low-density building areas is the same but the scenery is larger.

Abstract
Vegetation in cities keeps climate warming down and improves the health of people and ecosystems while making for a pleasant urban setting. Contemporary urban planning promotes sustainable green cities. Green and blue infrastructures, which help maintain an eco-friendly environment, are the primary instruments of this movement. This paper attempts to show the relative weight of plant life (trees, grass, orchards, etc.) seen from buildings in different urban settings (local urban patterns of high or low density of buildings). Landscapes open to view are identified by combining a digital elevation model and an 11-class land-use layer (including buildings, facilities, grey infrastructures, green and blue surfaces) in a computational tool that calculates viewsheds. The results show that vegetation is very much present in urban landscapes. In high-density built areas of city centres, the landscape is varied although not open and is dominated by trees, low-rise residential buildings and grass. Grey infrastructures and bushes are also very common. In low-density built areas the rank order of objects in view is similar but the landscape is more panoramic.

Keywords: built environment; landscape viewshed; land use; digital elevation model; topographic map