Agent-based Modelling of the Ecosystem Services Diffusion through Urban Green Spaces

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Ecosystem services definition proposed by the Millennium Ecosystem Assessment (MEA2005) « these are the benefits that human groups obtain from ecosystems ».

RESEARCH PROBLEMATIC

It belongs to the research project SERVEUR (ecosystem services of urban green spaces) funded by the Centre region in France: our objective is to identify cultural services brought by the urban green spaces for population and collectivities, in order to understand their tangible and intangible properties.

MODEL

Sociological studies have been conducted to qualify and quantify the perception of the nature offer by the inhabitants. Our model confronts the needs of people to diffusion of criteria (wildlife, geolocation, etc.).

AGENTS

Inhabitants are modeled as agents with a specific amount of « well-being ».

Math. Framework

Agents walk randomly, searching for what they want. Diffusion of criteria is done using pretopology theory (Belmandt2011) and multi-random sets (Molchanov2005).

A pretopological space (E,a) is defined by:
- a is an application (named pseudo-closure) on all parts of E
- a(∅) = ∅
- A ⊆ a(A)

Several types of diffusion are defined

REFERENCES