A roadmap for spatial sensitivity analysis

Working Paper

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Date

Abstract

1 Introduction

2 Roadmap

2.1 General view

Two global axis can be formulated:

1. The generation of synthetic spatial data

2. The import and manipulation of real spatial data

A longer term goal is a stronger link between these two.

2.2 Generation of synthetic spatial data

2.2.1 Raster data

- Single layer synthetic grids
- Multi-layer synthetic grids
- Multi-layer with specified correlation structure

2.2.2 Vector data

- Transportation networks
- Spatialized 'classic' network generation models
- Correlated layers
- Correlated network and raster

2.3 Architecture

Question : to what point methods are within oml plugin or in an external library ?

3   Implementation

3.1   Example of a workflow

We illustrate spatial sensitivity analysis by coupling a spatial generator embedded into OpenMOLE as a `Sampling` with a toy Luti model, using new features of the `NetLogoTask`

- Generate realistic correlated spatial grids with an exponential mixture using a `SpatialSampling`

- Plug this into a NetLogoTask (recursive arrays inputs) for a toy Luti model

- Get successive system states (recursive array outputs)

Application

First application : comparison of the scala implementation and the netlogo implementation of the Luti part of the Lutecia model (only spatial setup is random).