Cost OptimisatioN Framework for Implementing blue-Green infrastructURE(CONFIGURE)

SCAN ME PUBLICATION

Asid Ur Rehman*, Vassilis Glenis, Elizabeth Lewis, Chris Kilsby

Water Group, School of Engineering, Newcastle University, UK

* Asid-Ur-Rehman2@newcastle.ac.uk

ONE Planet

Newcastle University

Background

The cost-effectiveness of Blue-Green Infrastructure (BGI) in reducing urban flood risk is assessed using hydrodynamic flood models. However, simulating a wide range of BGI placement options becomes computationally impractical, requiring an intelligent way to find the optimal locations for BGI implementation. CONFIGURE offers such a smart approach by integrating an optimisation algorithm (Genetic Algorithm) with the state-of-the-art CityCAT hydrodynamic model.

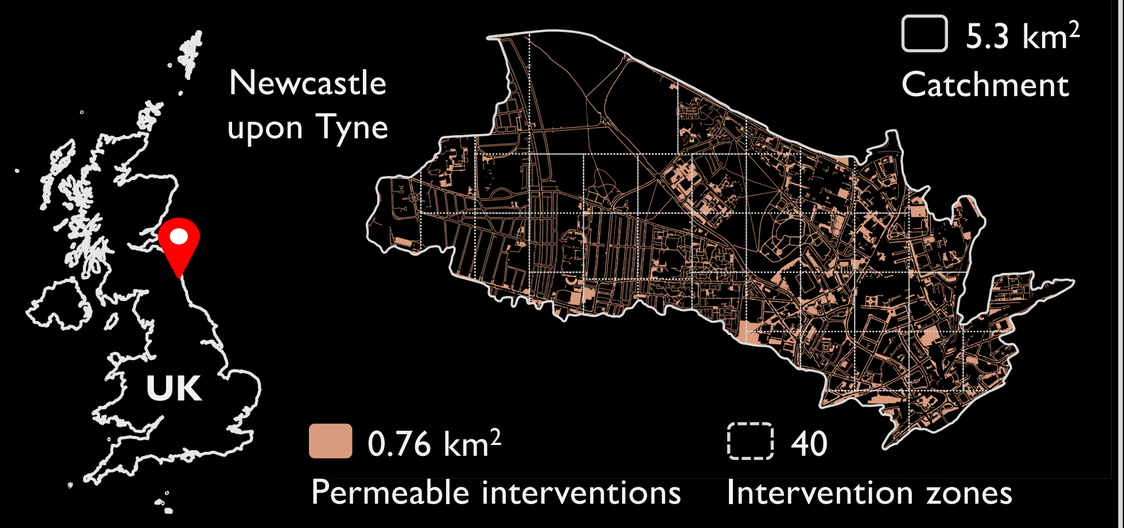
Genetic algorithm

python

CityCAT

CONFIGURE

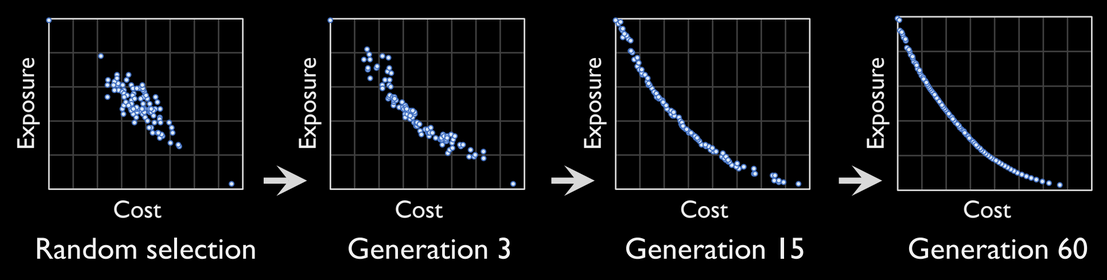
Case study

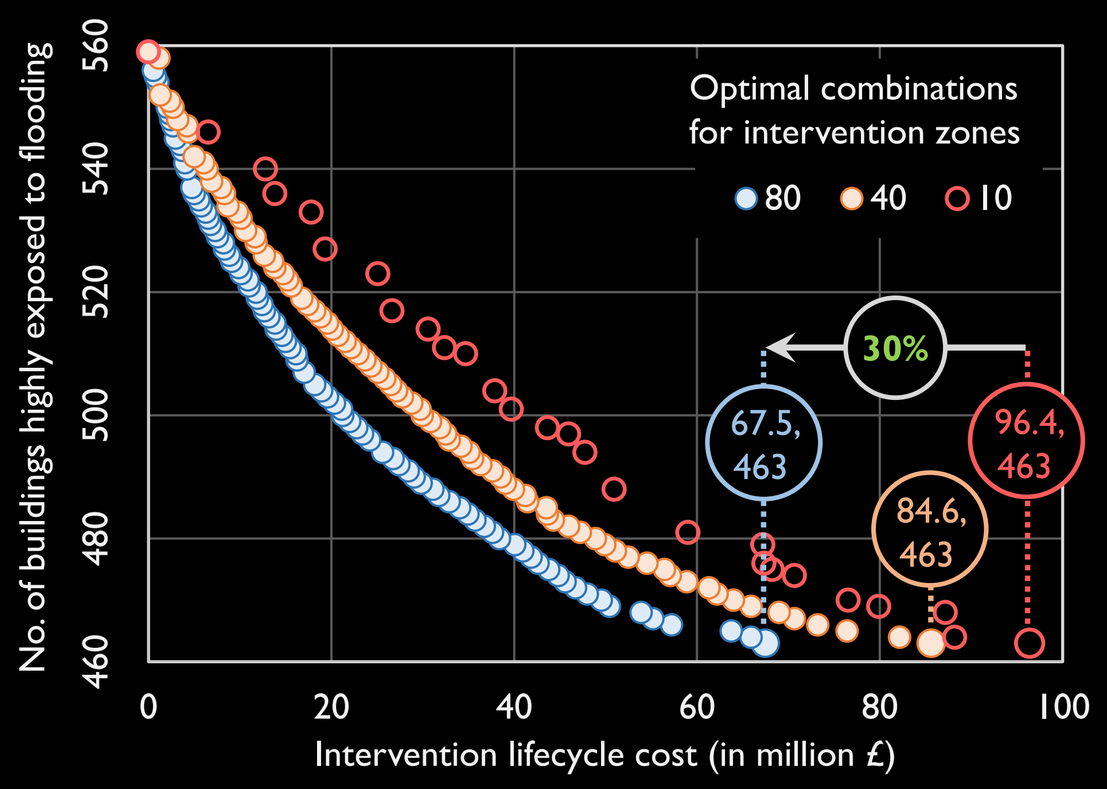


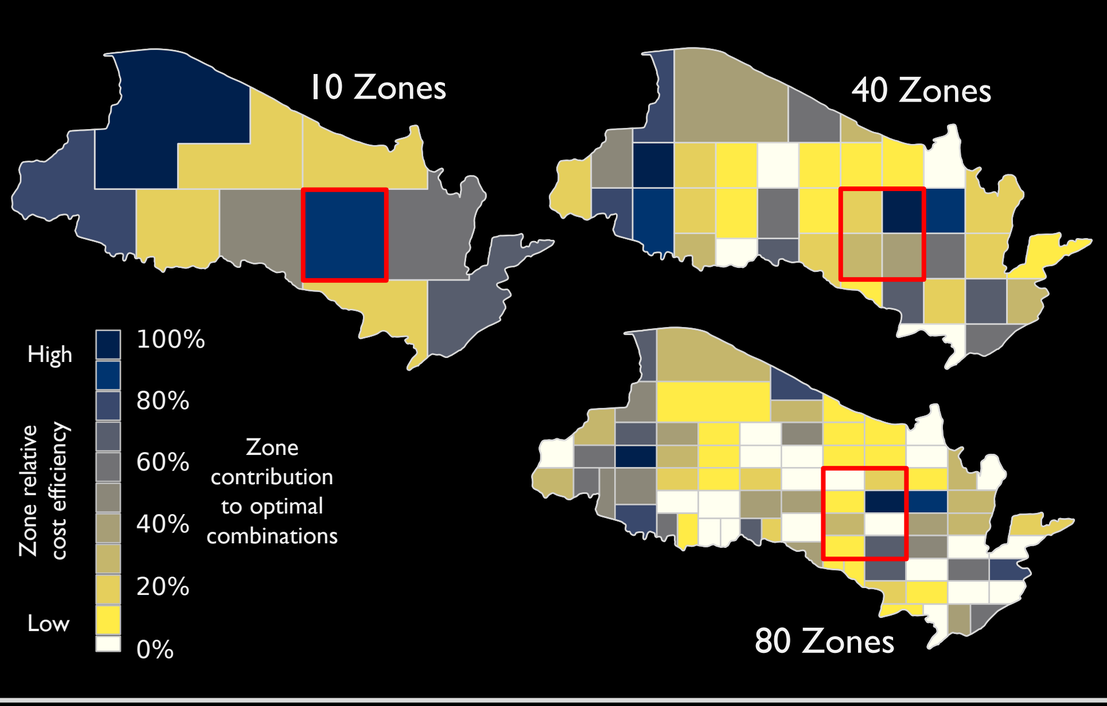
Parking areas and pavements were considered for permeable surface interventions. To evaluate the cost-efficiency of different parts, the intervention area was divided into varying numbers of zones.

CONFIGURE working & outputs

CONFIGURE evaluates the cost and efficiency of randomly selected combinations of permeable zones and iteratively evolves them (*referred to as generations*) to identify the optimal combinations, thereby deriving the most economical intervention locations.







FIND ME. . .

@spatialized

asidurrehman

RESEARCH FUNDING

This research is being carried out under ONE Planet Doctoral Training Partnership (DTP) funded by Natural Environmental Research Council (NERC) UK.

UKRI Natural Environment Research Council