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## Modelling the impacts of plant choice and management on ecosystem service provisioning by domestic gardens

Urban areas often experience issues such as **heat** and localised **flooding**, due to the use of dark, impervious surfaces. In the UK, 30% of urban area is domestic gardens – so how green they are and what **plant choices** we make can have a significant environmental impact on a **local scale**.





## **Research Objectives**

- 1. Determine how **plant choice** and **garden composition** affect the surface energy-, water-, and carbon fluxes of a garden
- 2. Understand the implications of plant choice and garden composition on 3 **ecosystem** services (ES): flood risk prevention, cooling and biodiversity provisioning
- 3. Create **planting recommendations** for UK gardeners based on 1 & 2, under current and future climatic conditions

## Methods

Model energy, water, and carbon fluxes using existing **land surfaceatmosphere exchange models -** predict how provision of ES may change in future climate scenarios, and for different garden configurations/composition



Current model = Urban Tethys-Chloris (UT&C) (Meili et al., 2020)

**Global sensitivity analyses** conducted on these models will determine vegetation parameters that most strongly affect these fluxes.

Then can **recommend** plant species, landscaping choices, and management strategies, that maximise ES provisioning.

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