

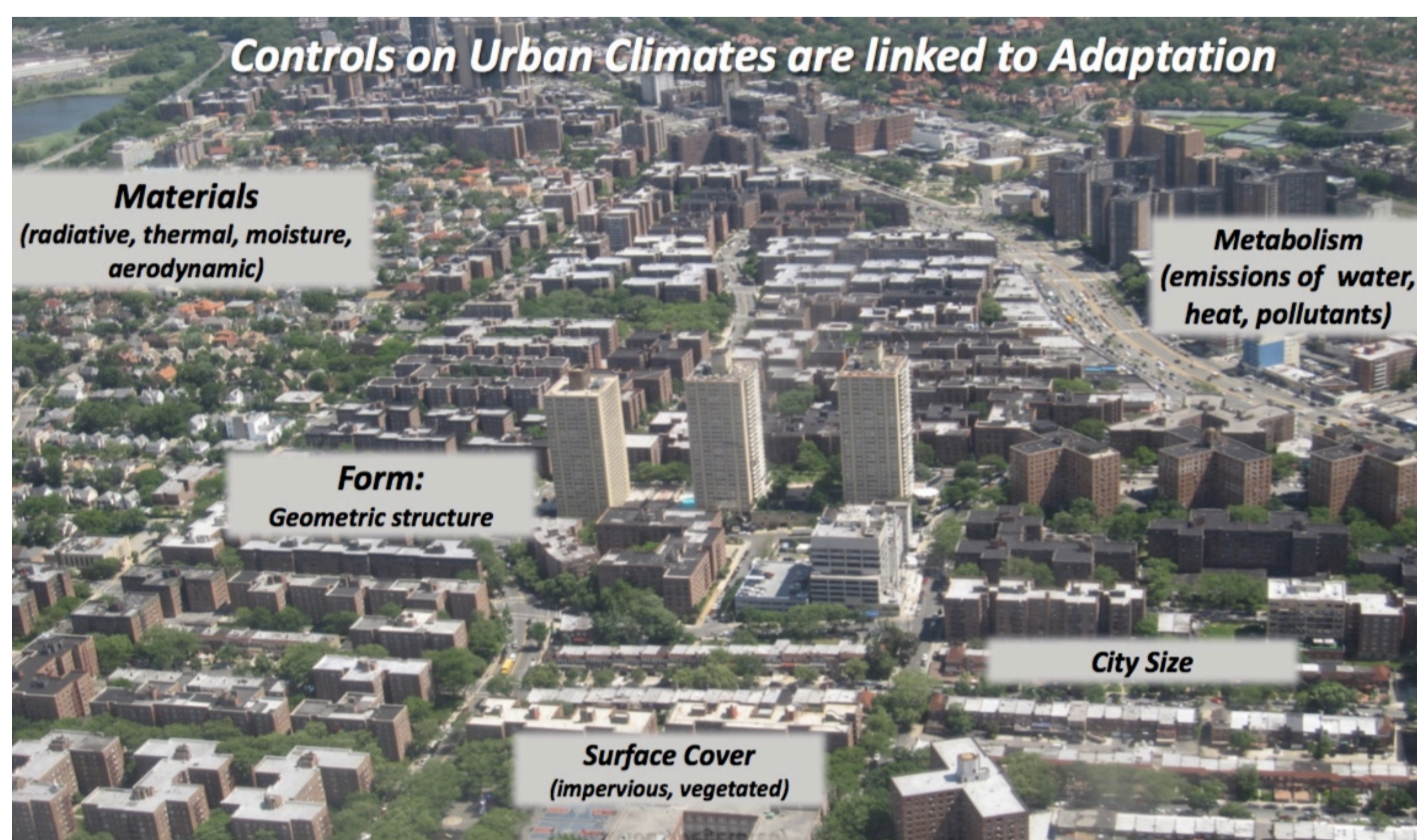
Urban Climate Information for Decision Making in Cities

Local to Global Decisions and Policies

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The Problem

The need for cities to adapt to, and mitigate, global climate change is driving demand for detailed information on urban climates at scales that cannot be easily met with current observing networks, regional and global climate models (RCMs and GCMs).



What is needed from Urban Climate Science?

1. Simulations of future urban climate at fine spatial scales:
 - integrated with urban expansion and population growth scenarios
 - uncertainty estimates
 - including coastal hazards for coastal cities
2. Urban climate observations, especially in Global South cities
3. High spatial resolution data on: urban structure and form; human behaviour; energy consumption
4. Climate change effects in the near future (i.e. coming decades)

Essential Climate Variables for Adaptation

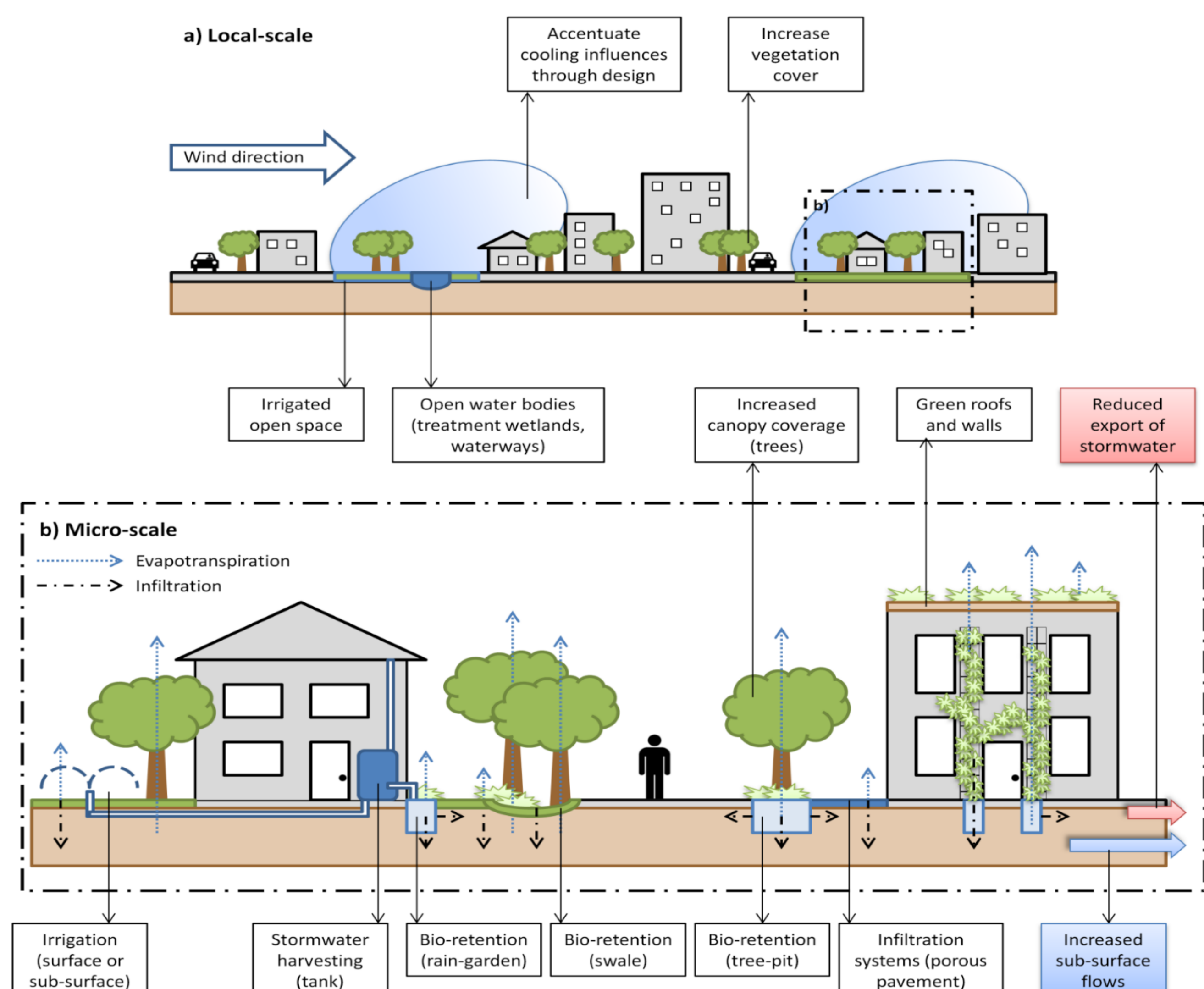
Adaptation is needed to reduce risk and increase resilience of urban areas in the face of climate change. A session at the IPCC Cities and Climate Change Science Conference in March 2018 strongly supported the need to identify one or more Essential Climate Variables (ECVs) that can be used to monitor adaptation progress in cities.

Robust bio-physical and/or socio-economic ECVs will feed directly into local and global climate change policy; e.g. through monitoring urban environmental adaptation progress through time and (possibly) against targets.

Urban adaptation ECVs could be:

- biophysical (e.g. changes in green canopy area)
- socioeconomic (e.g. investment in adaptation)
- linked to urban form and layout and the use of energy efficient construction materials and coatings

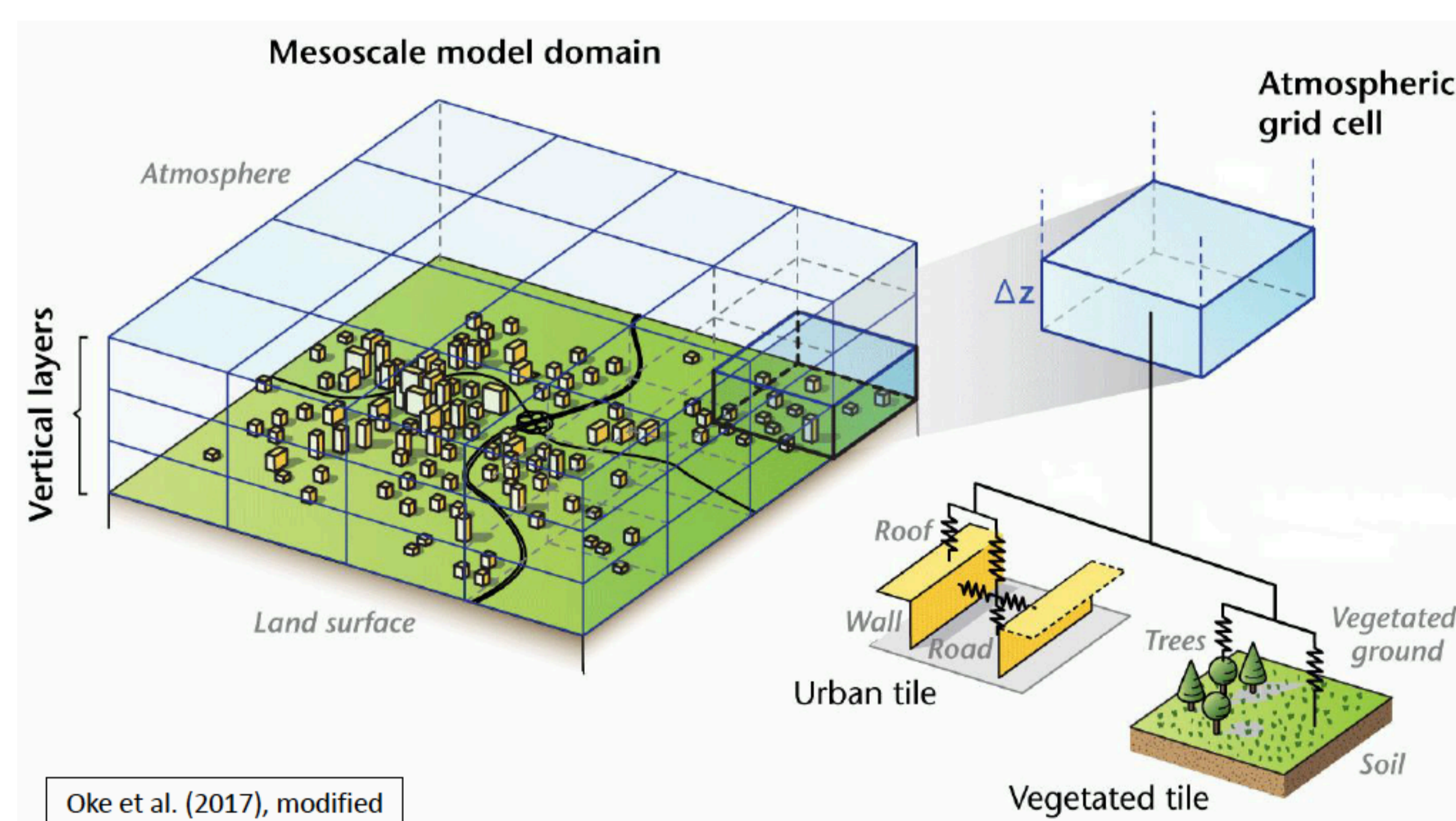
Several potential urban adaptation ECVs have been identified, mainly related to the biophysical characteristics of the urban environment



Urban-scale climate information needs

Impact assessments and adaptation plans for our cities require high spatial resolution climate projections along with:

- models that represent urban processes
- ensemble dynamical and statistical downscaling
- local-impact models



Forthcoming IPCC scientific assessments will need input from new research to identify, and address, critical gaps in our knowledge of translating global climate change to cities. This includes how to assess and reduce uncertainties.