



## **The soil-city interface: soil organic matter and ecosystem services**

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In cities, soil provides vital ecosystem services such as food provision, flood alleviation, urban heat island mitigation and carbon storage; as well as cultural services such as recreation and sense of place. As urban populations grow, cities become important locations for the delivery of these services. However, the role of urban soil in providing ecosystem services is a relatively under-researched area.

Urbanisation affects the physical, chemical and biological processes of soils. As cities expand, they cover greater areas of soil with sealed impermeable surfaces such as pavements and roads. This alters the structure, water dynamics, organic matter inputs, nutrient cycling and temperature regime of the soil; while topsoil is often removed or compacted as part of construction processes. There is a need to understand the effects of urbanisation on soil functions and the implications of this for ecosystem services.

We will present research examining how soil sealing and urban spatial pattern influence soil organic carbon (SOC). SOC is important for many soil functions and ecosystem services, and may play a role in helping cities become more resilient to climate change and flooding, improving local urban climate, and supporting greenspaces that benefit physical and mental health. To date, few studies have considered SOC as a proxy for urban ecosystem services as well as contributing to global carbon emissions.

Empirical data will be presented on SOC and nutrients from urban soils in Manchester (UK), from greenspaces and from under sealed surfaces. We will explore the relationship between sealed and unsealed soils, spatial patterns of SOC and greenspace connectivity, and the effect of disturbance by sealing. This research will contribute to our understanding of soil functioning in an urban environment, and the effects of urbanisation on key soil ecosystem services. It will provide vital information on an increasingly important soil interface, and will aid the future planning and building of more sustainable cities.