Modelling the impact of urbanisation on the heat island of the Greater London Area
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Abstract

Urban areas have well documented effects on climate, such as the urban heat island effect, reduction of wind speeds, enhanced turbulence and boundary layer heights, and changes in cloud cover and precipitation. This study examines the impact of the urban surface of the major agglomeration of London on local and regional climate by means of the numerical mesoscale model METRAS (Schlünzen 1988) coupled for the first time with the sophisticated urban canopy scheme BEP, developed by Martilli et al. (2002).

The results show that the relative fractions of urban land cover and of vegetation within the urban area have important implications for the near surface temperature, diurnal temperature range, wind speed and urban heat island intensity. The results also suggest that extensive future growth of the London urban area has the potential to increase temperatures, with significant increases for both daytime and night time. The specific forms of urban development, such as densification and spatial expansion, have an impact on these fields. These results have important implications for the design of cities and the management of urban climate.