



## **Determining the impact of climate change on population heat exposure in mid-latitude conurbations**

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With the majority of the global population now residing in urban areas, assessing the risk of future climate changes must now focus on fine-scale conurbations where there is a concentration of people and vital infrastructural assets. Even with ever increasing spatial and temporal resolutions, GCMs and RCMs exclude important urban heat and moisture exchange processes and/or do not capture intra-urban variation. Yet, such information is urgently required to assess the potential impacts of climate change on people (e.g. with respect to human thermal comfort and heat stress) and buildings (e.g. with respect to building energy use/demand prediction). Assessing these impacts is a necessary first step to begin formulating, costing and implementing local-level climate change adaptation plans to reduce the adverse effects of climate change.

The middle latitudes (60°S-30°S, 30°N-60°N) house approximately two-thirds of urban areas globally. While many experience a temperate climate, the impact of heat waves are greater in this region as the underlying populations are less acclimated to high temperatures. Moreover, building designs have been adapted for current climate conditions i.e. designed to maximise heat retention with a relatively low utilisation of mechanical cooling systems.

The impact of climate change on the intra-urban exposure to heat in this region has not been studied extensively, despite the fact such information is urgently needed to inform locally based adaptation planning. Hence, this presentation is aimed at addressing this gap in knowledge. We carry out a climate change impact assessment on heat exposure by modelling the urban climate effect and coupling this with climate change projections (RCP 4.5 & 8.5) for the eastern and midlands region of Ireland. We subsequently combine our simulations with the Universal Thermal Climate Index (UTCI) to carry out a heat risk/impact assessment for the population living in these urban areas up to 2060.