

EDITORIAL

Cities and Climate Change

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We are pleased to present this special virtual collection of articles, highlighting the multifaceted interactions between cities, local climates, and global anthropogenic climate change.

Climate change and urbanisation are the two global megatrends that transform human life and, at the same time, directly impact each other. Urban areas have the highest density of human populations and experience altered atmospheric conditions due to anthropogenic modification of natural physical settings and extra emissions of air pollutants and trace gases. One of the most obvious examples of climate modification due to humans is the urban heat island (UHI). This phenomenon describes urban regions, which experience higher temperatures than their rural, undeveloped surroundings, particularly at night, serving as a clear example of localised urban climate change.

Cities are broadly recognised as central to global climate change, owing to their significant greenhouse gas emissions driven by dense populations and concentrated economic activities, which contribute to anthropogenic global warming. Cities simultaneously contribute to climate change and remain vulnerable to its impacts from extreme weather events, sea-level rise, and heatwaves. On the other hand, cities are integral to developing solutions that drive climate action, possessing the potential to significantly reduce climate risks and greenhouse gas emissions associated with urban areas and activities.

The Intergovernmental Panel on Climate Change (IPCC) is currently in its seventh assessment cycle, which includes a Special Report on Climate Change and Cities, set for release in

early 2027 (<https://www.ipcc.ch/report/special-report-on-climate-change-and-cities/>). In support of this special report, the *International Journal of Climatology* offers this curated virtual collection of recent, relevant research articles published in the period between 2020 and 2024.

The collection is divided into five sections covering the following themes:

1. Measured urban heat island (air and surface) and moisture characteristics in cities.
2. Past air temperature trends in cities.
3. Heat stress, heat waves and extreme air temperature in cities.
4. Modelling studies of present and future urban heat and heat risk.
5. Influence of urbanisation on precipitation and floods.

These themes are curated to contribute towards literature assessment or urban climate scientific research that can be considered in all five chapters of the Special Report. Our hope is that results from these studies can yield important policy-relevant information for urban stakeholders to implement policies and decisions towards the end of climate resilience and sustainability.

We trust that you will enjoy this special selection and find it inspiring.

Author Contributions

Matthias Roth: conceptualization, writing – original draft, writing – review and editing, investigation, methodology. **Enric Aguilar:** writing – review and editing, supervision. **Winston Chow:** writing – review and editing.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The authors have nothing to report.