Foreword

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Cities are both the primary source of energy, carbon, pollution and waste problems facing the world as well as potential wellsprings of solutions in our Anthropocene age. The urban climate anomaly exemplifies this duality of unintended climate, comfort and energetic consequences of urbanisation on the one hand, and the potential offered by its mitigation to act as a framework for the wider societal, environmental and well-being benefits on the other. Yet, the study and, more importantly the application of urban climate knowledge still remains weak, compared to other socio-environmental conditions associated with cities. Part of the reason is the often narrow focus of the limited studies on the subject, as well as the limited metrics, models and toolkits available to researchers and practitioners. Equally important are the incomplete and erroneous assumptions about urban microclimate by practitioners and policy makes and a weak understanding of what this knowledge could and could not deliver in specific contexts.

I am therefore pleased to be asked to write this foreword to a book that attempts to bridge the gap between the 'big picture' as well as tools and metrics that provide the wherewithal of applicable knowledge. The editors are to be congratulated for bringing together such a variety of voices from across the climatic, socio-economic and developmental contexts of world's cities as well as modellers and practitioners from diverse professional and research backgrounds.

The organisation of the book in three parts is highly useful in addressing the challenges in applying the limited urban climate knowledge to policy and practice of holistic sustainability in cities. With its overview of the energetics, thermodynamic and thermal comfort aspects of urban climate and linking these to the wider sustainability issues in cities, Part 1 provides a good overview of the wider picture. The exploration of energy and comfort issues in specific climates (high latitude, Mediterranean, tropical and arid climates) adds value to this overview by situating the key issues in specific geographical contexts.

While it is true that urban climate studies are relatively few in number, the situation is changing rapidly in recent years and Part 2 provides an excellent overview of popular models and approaches. Both the overview of the tools as well as the mechanics of their utilisation should be of interest to new and experienced researchers aiming to push the urban climate frontier further towards practical application.

Ultimately, the mitigation of the negative consequences of urban climate boils down to three broad strategies: manipulation of urban form, green infrastructure and materials. These are well captured by Part 3 in different climatic contexts. The inclusion of case studies further enriches the discussions in this Section.

We thus have an urban climate compendium of high value in our hands. By placing the modelling of urban climate in the wider context of sustainability as well as showcasing applications and exemplars from different contexts, the present volume could add to our limited but growing understanding of

the phenomenon of urban climate and, more importantly, integrate such knowledge within actions that address the wider challenges facing 21st century cities.

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