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Enhancing Thermal Comfort and Climate Resilience of Buildings during Extreme Events

Guest Editor:

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Message from the Guest Editor

Extreme climatic events are threatening today's cities and posing crucial challenges to buildings' comfort. Together with providing resilient cooling solutions that increase the penetration and share of central and personalized cooling and heating systems to decarbonize the energy supply, it is also essential to make buildings resilient against climate variations and extremes. The risks and consequences of long-term and short extreme climate events are amplified in buildings that require strict thermal comfort conditions with vulnerable user profiles. A failure in assuring minimum thermal comfort or indoor air quality levels can propagate toward occupants' evacuations, stroke risk, or increased mortality rates inducing cascading failures. Therefore, evaluating buildings' resilience against short, long-term, and short climate change-related disruptions is vital to decrease such risks and safely prepare the newly built and existing climate-proof. This special issue aims to provide a long-lasting contribution to occupant health and comfort in buildings to strengthen interdisciplinary research and share the dynamics and cutting-edge views in the related fields mentioned above.

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Message from the Editor-in-Chief

Current urban environments are home to multi-modal transit systems, extensive energy grids, a building stock, and integrated services. Sprawling neighborhoods are composed of buildings that accommodate living and working quarters. However, it is expected that the cities and communities of the future will face complex and enormous challenges, including maintenance, interconnectivity, resilience, energy efficiency, and sustainability issues, to name but a few. A smart city uses advanced technologies and a digital infrastructure to improve the outcomes in every aspect of a city's operations. A smart building optimizes the experience of occupants, staff, and management by using a modern and connected environment. Innovations in technology that can bring dramatic improvements to design, planning, and policy are critical in developing the cities and buildings of the future.

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