

International Conference on Sustainability in Energy and Buildings

Invited Sessions

Title of Session:

Design for complexity: multi-scale and multi-objective adaptive strategies and methods for uncertain climatic conditions

Name of Chair:

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Description:

The consequences of climate change are expected to increasingly affect cities worldwide, with varying degrees of exposure and vulnerability. Extreme precipitations and longer drought periods, exacerbated flooding, Urban Heat Island and heatwaves are among the challenges that increase the intrinsic complexity of the built environment. Without the appropriate exploration of future scenarios and the appropriate tools to design for this complexity, we might fail to address the need for sustainable and resilient cities.

Indeed, cities (buildings + outdoor spaces) have a widely recognized role in the mitigation of climate-related challenges, as they are the main field where spatial planning/design and decision-making regulate adaptation to climate change. However, it remains unclear when, how and to which degree cities could adapt, considering the environmental, social, and economic uncertainties and the increasing complexity.

Therefore, this session, aims to gather significant contributions on computational methodologies and design strategies to face these pressing challenges towards adaptation and resilience.

Contributions on the following topics (but not limited to) are encouraged:

- Parametric design
- Multi-objective optimization
- Short-term flexible passive strategies for increasing built environment adaptation to flooding, Urban heat island, heatwaves (e.g., Sustainable Urban Drainage solutions, cool materials for buildings and urban spaces)
- Proactive adaptivity and dynamic adaptivity of cities
- Explorative scenarios to cope with uncertainties in the built environment
- Interdisciplinary approaches to tackle complexity in urban areas

Methodological, **experimental**, or **computational** original studies and **review** articles are welcome on the above topics.

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