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COMPUTATIONAL MECHANICS FOR URBAN ENVIRONMENT 1200

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ABSTRACT

In 2050, about 70% of the world's population would live in urban areas. In view of the megacities growth and the worldwide urbanization, the quality of life in cities has to be improved by proposing new services and innovative urban plannings which respect the environment and are low-energy consuming. In Building and City Information Modeling (BIM & CIM), the numerical mock-up can allow a better understanding of urban phenomena such as water and air quality, energy, transport and structural health monitoring. The numerical mock-up can also be useful to select relevant urban plannings using virtual testing. It is a promising decision support tool for collectivities.

The mini-symposium is intended to bring together experts to exchange and discuss the latest results and developments in computational methods applied to modeling and urban monitoring. Particular topics of interest for the session include (but not limited to):

- Structural and Computational Fluid Mechanics for urban areas
- Thermal applications in buildings and/or urban areas
- Indoor/Outdoor air pollution
- Physical models for cities
- Model reduction order and Data-Driven techniques
- Inverse problems and/or Data assimilation techniques
- Software solutions for Smart-Cities

Studies comparing numerical simulations and urban sensor outputs in cities/living labs or in fully controlled mini-cities in a climatic chamber like the equipment "'Sense-City" [1] or in other facilities are particularly welcomed.

[1] Derkx, F., Lebental, B., Bourouina, T., Bourquin, F., Cojocaro, C.-S., Robine, E. and Van Damme, H. The *Sense-City project*. Vibrations, Shocks and Noise (2012).