

Study on the impact climate change on the resilience of the EPFL campus

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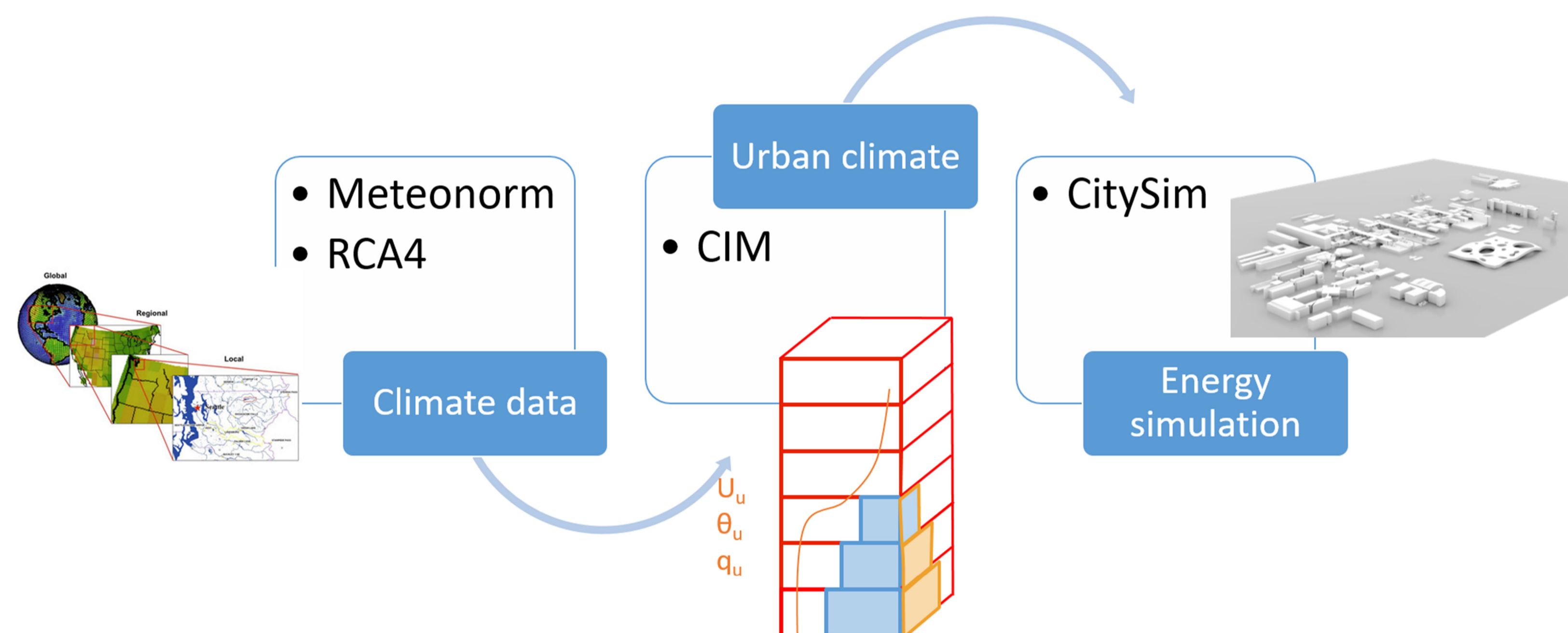
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Introduction

Meteorological conditions will change in the future with the current climate change. The capacity of cities to adapt to these modifications are crucial in order to increase the liveability of the urban areas but also to decrease their energy and carbon footprint. However clear pathways towards more sustainable and resilient cities are not yet available or are unclear with respect to the energy strategy. **One of the reasons for this is that the data for climatic models are often given with a very coarse resolution and do not account for the specificities of urban areas.** It is thus difficult to use these variables to provide useful information to urban planners and cities to develop mitigation and adaptation strategies.

Methods

We propose here to use multiple climatic scenarios from the IPCC (**RCA4 data**) to derive new meteorological dataset (Nik et al., 2016) using **CIM** (Mauree et al., 2017a). These will then be used in the building energy model CitySim to calculate the energy demand.

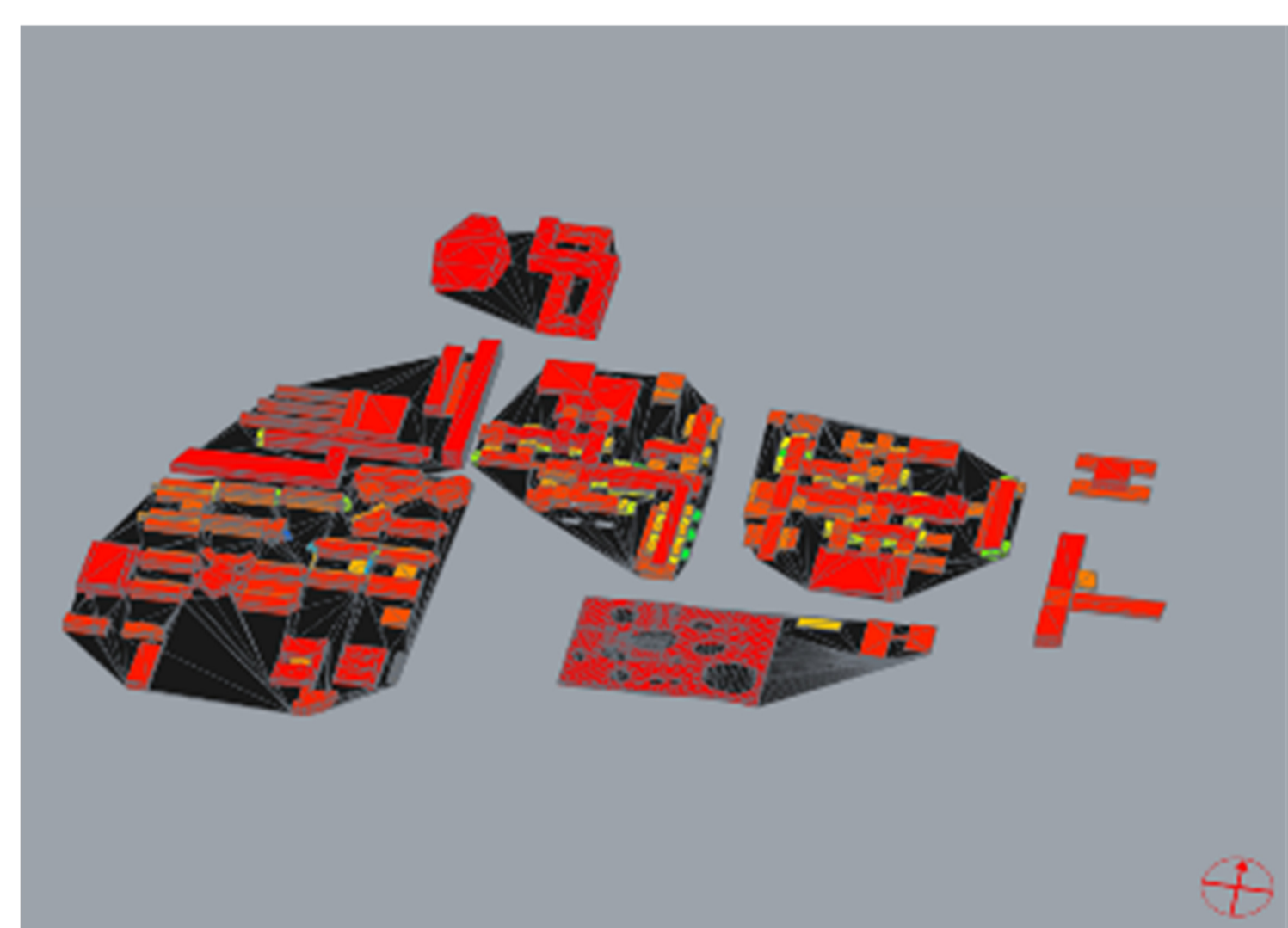


The **EPFL campus** is used as a study case. A model for the campus has been previously developed and validated (Mauree et al., 2017b).

The same model to define the impact of future climate scenarios (2039, 2069, 2099) on the demand. Moreover, the value of the typical renovation strategies (**Minergie-P**) are also evaluated.

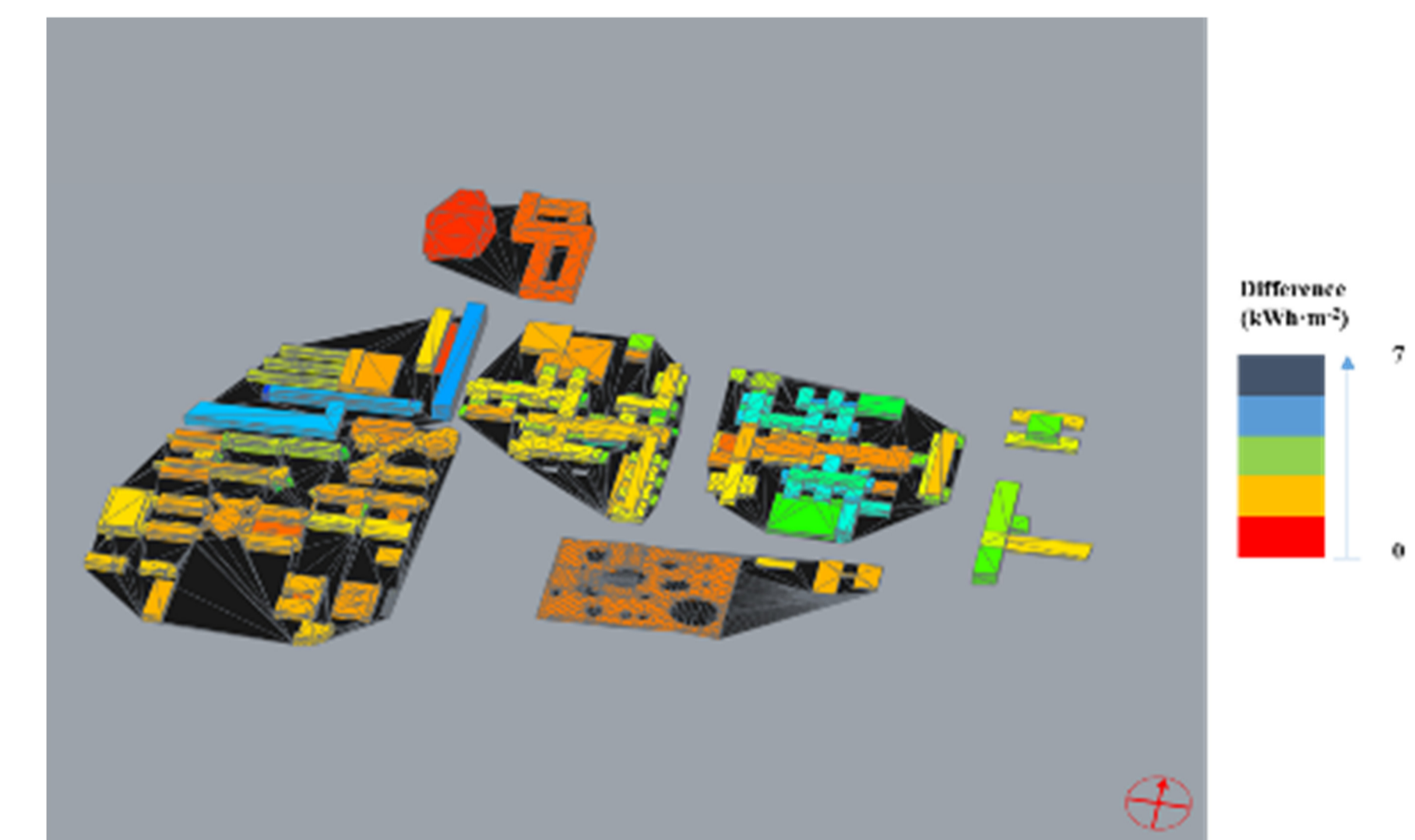
Results & Discussions

Relevance of **taking local climate** into account shown when estimating **future energy demand!**



Difference in heating demand for 2099 with and without CIM

- **↑↑ rise** in the cooling demand
- Expected decrease in heating demand
- Minergie-P renovations **not sufficient** to achieve resilient buildings.



Difference in cooling demand for 2099 with and without CIM

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Data

Code

Paper

