



How will future global warming affect urban climate and building energy demand? Exploration through fully coupled and single column urban modelling systems.

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A warming climate will increase building energy cooling demand and reduce heating demand – but in what regions, and by how much? This talk explores this issue through the use of the newly developed integrated urban land surface and building energy model UCLEM. We present initial results of global coupled atmosphere-land surface simulations at climate timescales (10-100 years) and compare them with results using only a single column framework which has greatly reduced computational costs.

We also highlight some of the important parameterisation differences of UCLEM compared with other well established urban land surface/ building energy models such as CM-BEM, BEP+BEM and TEB-BEM. In particular we discuss the representation of human behaviours based on a statistical method used to predict energy use in the Australian national electricity network. We find an appropriate representation of human behaviours through statistical means can greatly improve the energy use predictions of the physically based model.