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Developing a Framework for Improvement of Building Thermal Performance Modeling under Urban Microclimate Interactions

Developing a Framework for Improvement of Building Thermal Performance Modeling under Urban Microclimate Interactions

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Highlights:

- A framework developed for improvement of building thermal performance modeling under urban microclimate interactions
- The framework is based on the model improvement for CFD-BES coupled models
- CFD model improvement is achieved through a stochastic optimization of the closure coefficients
- Improved CFD model is used to calibrate BES model's inputs such as velocity profile, discharge coefficient, CHTC, etc.
- Significant deviations were found in prediction results by the default and calibrated BES models
- More than 60% deviation was found in prediction of energy saving potential of cross-ventilation by the two models for a small office building

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