



Coupling the Town Energy Balance Model (TEB) to the Weather Research and Forecasting (WRF) model: implementation and evaluation

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The Town Energy Balance (TEB) is a modular, physics-based single-layer urban canopy parametrisation (UCP) scheme designed to simulate the surface energy, water, momentum balance of urban districts. Since its first version, TEB's capabilities have increased to now account for in-canyon urban vegetation, heat gains due to solar radiation, heat conduction through the building envelope, infiltration, ventilation, internal heat gains, release of waste heat from air conditioners (ACs) and heating, green roofs, irrigation, solar panels, and snow. We present a version of TEB coupled to the Weather Research and Forecasting (WRF) model, here named WRF-TEB. We evaluate its ability to simulate surface heat fluxes in a dense mid-rise European urban setting by comparing WRF-TEB results with the eddy-covariance flux measurements conducted during the CAPITOUL campaign of 2004 in Toulouse. We further evaluate the simulated near surface air temperature for different urban and suburban sites with stations observations from the same campaign.