In view of the global rise in temperatures, the urban climate is increasingly becoming a topic of discussion. We perform a variety of simulations using the Weather Research and Forecasting (WRF) model to assess how specific meteorological variables (temperature, wind speed, planetary boundary layer height, precipitation, water vapour mixing ratio) in European cities change depending on urban canopy parameters such as urban fraction, roof albedo, anthropogenic heat release, or building height. The simulation time span is five years, summers and winters only. Two urban parameterisation options are compared: the single-layer urban canopy model and the building effect parameterisation coupled with building energy model. Of the urban canopy parameters tested, roof albedo and urban fraction were found to be the most impactful in the potential mitigation of the urban heat island.