

What is the future direction of urban environmental modeling?

There are two approaches to modeling urban effects on airflows. One is an urban canopy parameterization and the other is computational fluid dynamics (CFD). The former is appropriate for a mesoscale atmospheric model where horizontal grid spacing is much larger than individual building size. The latter is useful to simulate airflows in detail around buildings. Our model merges the mesoscale and CFD model capabilities by using nested domains.

An urban canopy parameterization is used in the outer domains where horizontal grid spacing is large and the CFD approach is used in the inner domain where horizontal grid spacing is small enough to show airflows and wind tunnels around individual buildings.