

ABSTRACT

The present work deals with numerical simulation of wind flow around rectangular buildings and sloping roof structure. Flow over two and three buildings in succession with different spacing and height has been considered in this study with a view to understand flow field interference effects. Both two and three-dimensional simulations have been attempted in this study. However major part of the work is devoted to two-dimensional simulation. Numerical codes have been developed which are based on numerical solution of unsteady, Reynolds averaged Navier-Stokes equations with Large Eddy Simulation (LES) technique. Test cases are provided in which numerical predictions have been compared with experimental data. Velocity vector plots and surface pressure distributions (C_p) have been reported. The results show that flow field is affected by spacing between the buildings and building heights.

A 3D code has also been developed in this study and validated with a test case. The code has been used to study flow over two successive building structures involving a sloping roof and a rectangular building. Some significant differences have been observed between 2D and 3D simulations.