

Comparison the Influence of Conifer and Deciduous Trees on Dust Concentration Emitted From Low-lying Highway by CFD

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Abstract

The influence of different types of the vegetative barriers near a highway on dustiness was studied. Transport, dry-deposition and sedimentation of pollutants PM10 and PM75 emitted from the highway was numerically simulated. Mathematical model was based on the Navier-Stokes equations for turbulent fluid flow in Boussinesq approximation. Turbulence was estimated by the standard $k-\epsilon$ model. The pollutants were considered as passive scalar with gravitational settling. The AUSM+up scheme in finite volume formulation on unstructured orthogonal grid was used. The situation was simplified as 2D case with only two components of wind velocity, the computational domain contained highway which serves as pollutant source. The differences between the conifer and deciduous trees on pollutants deposition were studied. Different widths and heights of each barrier type were tested as well.

References

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