Environmental impact of developing large buildings close to residential environments

Meruyert Zhunussova, Martin Jaeger, Desmond Adair

- School of Engineering

Abstract

High-resolution computational fluid dynamics (CFD) simulations have been performed to access the dispersion of air pollutants (CO2) emanating from traffic in a busy street and in the vicinity of a complex configuration of buildings located in Salmiya, Kuwait City. New buildings are planned for this area, and the work includes predictions for the dispersion of pollutants after their completion. The CFD simulations are based on calculated CO2 concentration levels based on traffic counts taken on location in Salmiya with the existing configuration of buildings in place. As the computer code used in this work has been validated previously it is thought that predictions on the addition of the new buildings are suitable as indicators of any potential air pollution problem areas. It was found for light winds the proposed new buildings helped reduce pollution in the vicinity of the residential buildings, but as the winds became more moderate to strong, there was a tendency for pollution to get trapped in the residential street.

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