

Wikiprint Book

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Lagrangia particle dispersion model

SPRAY is a three dimensional model designed to simulate the airborne pollutant dispersion, able to take into account the spatial and temporal inhomogeneities of both the mean flow and turbulence.

Concentration fields generated by point, areal or volume sources can be easily simulated by this model. The behaviour of the airborne pollutant is simulated through “**virtual particles**” whose mean movement is defined by the local wind and the dispersion is determined by velocities obtained as solution of Lagrangian stochastic differential equations, able to reproduce the statistical characteristics of the turbulent flow.

Different portions of the emitted plumes can therefore experience different atmospheric conditions, allowing more realistic reproductions of complex phenomena (low windspeed conditions, strong temperature inversions, flow over topography, presence of terrain discontinuities such as land-sea or urban-rural), hard to simulate with more traditional approaches like the Gaussian one.