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A Lagrangian Stochastic Model for the concentration fluctuations

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Abstract. A Lagrangian Stochastic Model for the two-particles dispersion, aiming at simulating the pollutant concentration fluctuations, is presented. Three model versions (1-D, 2-D and 3-D) are tested. Firstly the ability of the model to reproduce the two-particle statistics in a homogeneous isotropic turbulence is discussed, comparing the model results with theoretical predictions in terms of the probability density function (PDF) of the particles separation and its statistics. Then, the mean concentration and its fluctuations are considered and the results presented. The influence of the PDF of the particle separation on the concentration fluctuations is shown and discussed. We found that the separation PDF in the inertial subrange is not gaussian and this fact influences the predicted concentration fluctuations.

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