

## ***Interactive comment on “Numerical modelling of flow and transport in Bari industrial area by means of rough walled parallel plate and random walk models” by Claudia Cherubini et al.***

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Received and published: 19 May 2018

The manuscript is well structured and presents very strong ties to prior work. The modeling methods are generally well explained and well suited to the case study presented. There are a few places within the manuscript where further clarity would help the authors' message.

1. Line 98-99 "...each time applying  $v$  based on one of the three 'equivalent apertures'": I think the authors are referring to  $v$  as velocity, however, introducing variables in the introduction could lead to confusion.

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2. Line 399:  $n_f$  is not yet defined here.
3. Line 457 "Where  $\alpha_L(L)$  and  $\alpha_T(L)$  are the longitudinal and transverse dispersion coefficients respectively.": These are the dispersivities, not the dispersion coefficients.
4. Line 459: "The solute plume is discretized into a finite number of particles.": How many?
5. Line 465:  $Z_1$  and  $Z_2$  are not defined. Also,  $Z_1$  and  $Z_2$  for the x and y jumps should be different from each other.
6. Line 468-470 "For steady-state flow and for a source constant intensity, the assumption that the particles  $N$  released in time interval  $(t_1, t_1 + \Delta t)$  follow exactly the same random trajectories of the particles  $N$  released during the previous interval  $(t_1 - \Delta t, t_1)$  is possible.": Why is this true? Please add a reference to back this claim up. Since your random walk method should be drawing new random numbers every step for every particle, it seems that this should not be true.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-106>, 2018.

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