

The paper gives a review on the usage of the lattice Boltzmann method in wind farm simulation. Instead of presenting data, the various aspects of wind farm simulation, large scale LES, boundary layer functions, actuator line-models, stratified atmospheric boundary layers are discussed in textual form. Actual data is only shown for performance with different GPUs.

I believe that the paper fulfills the standards of this forum and can be published with minor revisions, albeit more quantitative discussion based on detailed data would certainly be preferable. The discussions also appear to be skewed towards a specific lattice Boltzmann model and it is not entirely clear whether this is due to the popularity of the cumulant model in the wind engineering field in general or the popularity of that models with the authors in particular.

We have given particular attention to the cumulant model since we perceive it as the most popular model. To provide a more quantitative discussion of the different collision models, we have added the new figure 4, showing the number of publications featuring each collision operator from a systematic literature review.

Some specific points listed below require some attention:

l. 82: “paragraph follows the excellent description by Kruger et al.”, not saying Kruger is not excellent but scientific publications profit from avoiding judgments of this kind.

We have adjusted the manuscript accordingly.

Line 141 mention Strang splitting and/or integration along characteristics to explain 2nd order convergence.

We now mention both methods.

l. 144 “First, each velocity set leads to a speed of sound” how does the velocity set lead to a speed of sound?

We have clarified the statement.

l. 210 depending on the geometry of the boundary, the system of equations might either be over- or under-specified.

We have clarified the statement.

l.219 bounce forward only works for straight boundaries

We have clarified the statement.

l. 239 sponge layers do not primarily dampen waves. They eliminate eddies that would CAUSE waves when they interact with pressure boundary conditions. Non-reflective BCs are not an alternative to sponge layers or vice versa as both act on different problems.

We have clarified the statement.

2.2 Simulating wind turbines and farms in the LBM → confusing → Simulating wind turbines and wind farms in the LBM

We have clarified the statement.

l. 660: why does the simulation of urban flows reduce the need for wall models?

We have clarified the statement. Urban flows are typically dominated by drag forces of bluff bodies instead of aerodynamically rough walls.

l.739 method method

We have removed the duplicate.

l. 893: actuator disk has not yet been applied: An actuator disk was used in the Ph.D. thesis of Schoenherr for a ship propeller.

We have weakened our statement. However, we don't believe the method used by Schönherr should be considered an actuator disk. From personal communication and reviewing the original source code used we know that Schönherr applies a method akin to, for example, the wall model approach from Malaspinas et al. (2014). Hence the propeller does not act as a forcing term but rather sets the velocity.