

Interactive comment on “A control-oriented dynamic wind farm model: WFSim” by Sjoerd Boersma et al.

Anonymous Referee #2

Received and published: 19 December 2017

Dear Authors,

your paper is interesting and well written. I recommend publication after addressing the following points.

- (1) Page 2: The first paragraph of the abstracts reads like part of an introduction. Please reformulate the abstract in a more functional manner. Specify what you mean by “validated with high fidelity data” and give a rough summary of the findings. Also, preferably use present or past tense instead of “will be” formulations.
- (2) Pages 3/4: In the model summary, please fill the gap between LES models and engineering models with 3D RANS references.
- (3) Page 5: Indicate what you mean by “high fidelity simulation data” and the corre-

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sponding site/wind farm characteristics (number of turbines, turbine types, ...)

- (4) Page 7, first paragraph: Please clarify if the axial symmetry is assumed or not, in other words elaborate on the function $\tilde{v}_3(x,y,z)$. How to imagine the 2D model embedded into 3D space?
- (5) Page 8: Please elaborate on the physics behind or the purpose of the function G.
- (6) Page 9: The mixing length is for example unequal zero within the shaded area of turbine n in the central region of Fig. 3 (beginning of the curved arrow), i.e., at the region of the ramp (to which that arrow is pointing). Why should the ramp have that jump to zero at $x_n = d$? In other words, why is d smaller infinity? What does that mean physically? What is the physical meaning of the beginning of the ramp at $x_n = d$? Please make the model a little more plausible to the reader. What is the physical implication of zero mixing length everywhere else?
- (7) Page 9: The vector s is undefined.
- (8) Page 14: What is meant by “a regular notebook”? Which programming language was used for the implementation?
- (9) Page 14: What is the meaning of “relatively small”?
- (10) Did you check mesh convergence for the presented results? Please add a comment or a graph.
- (11) Please quantify explicitly the calculation times for all results. How does it relate to the response time of the controller and the chosen time step of the simulation?

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