

Interactive comment on “Why the Coriolis force turns a wind farm wake clockwise in the Northern Hemisphere” by Maarten Paul van der Laan and Niels Nørmark Sørensen

Anonymous Referee #2

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General comments:

One of only a few papers for reviewing with not much to criticise... well done!

The paper addresses an important issue within the "wakes in the ABL" field and thus perfectly matches the scope of WES. The solution presented is consistent and reasonable. It provides a convincing approach for considering the Coriolis force and - more important - interpreting its impact on the wake flow. The paper's reasoning is clear and the modeling setup is appropriate for tackling the question. Based on the assumptions made, the workflow including the results is reproducible. As always when specific models are used it is hard to identify (as a reader) the influences due to model's life of its own.

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Nevertheless, the paper is definitely a valuable contribution to the field.

Specific comments:

The roughness length for the wind farm has been chosen as 1m. Did you check for its influence on the analysis? E.g., by comparing with a smaller one?

Technically the paper is of good quality with no flaws in English language – only a couple of typos and small technical issues were found (see next paragraph).

Technical corrections:

p1, l21: deflections

p2, l6: as a result

p2, l29: boundary layer height

p3, l6: Blackadar

p3, l9: buoyancy

p4, l15: inserted as the inlet BC (?)

p5, l9: contour plots

p6, l4: Figure 5 shows

p6, l9: “. . .deflection from Figures 4 and 5 is explained . . .“ (no comma)

p7, eq.4: "Coriolis . . . Pressure . . . Turbulence and p8, l7: "turbulence is in balance with the Coriolis force and pressure gradient": imprecise naming: physically, it's a balance of accelerations

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