

Wind-tunnel analysis of wake-steering control strategies on a multi-column
model wind farm

by

D. Micheletto, J. H. M. Fransson & A. Segalini

Replies to Reviewer #1:

We appreciate the additional feedback regarding our manuscript. In the following, we address the reviewer’s suggestions for improvement, and point out the changes compared to the original manuscript. Parts that have been rewritten or added will be highlighted in red in the revised version of the manuscript.

I was surprised to note that the authors refused to include major parts of these explanations in the revised manuscript. I believe that, for instance, including a more detailed discussion of potential wall effects and their implications and limitations on the conclusions, as well as the implications of the observed asymmetries for the applicability of wake steering, would significantly strengthen the manuscript. If both reviewers raise these concerns, it is likely that the reader will also have the same questions. Therefore, I would welcome it if more of the explanations in the rebuttal were incorporated into the manuscript prior to final publication.

We have now added the explanations presented in the first letter in the revised manuscript, including a small section (Sect. 3.1.4) dedicated to the effects of the side walls.

Regarding data representation, in my opinion, the colormap plot shown in the reply to the reviewers is more intuitive than the scatter plots currently included in the manuscript, particularly with regards to the effect of the yaw angles in the second row. I agree that the current continuous colormap hides the fact that only positive yaw angles in the first row lead to power gains. However, I believe that this issue arises from a poorly chosen continuous colormap, which doesn’t match the diverging nature of the represented data. A diverging colormap, for example, the classic

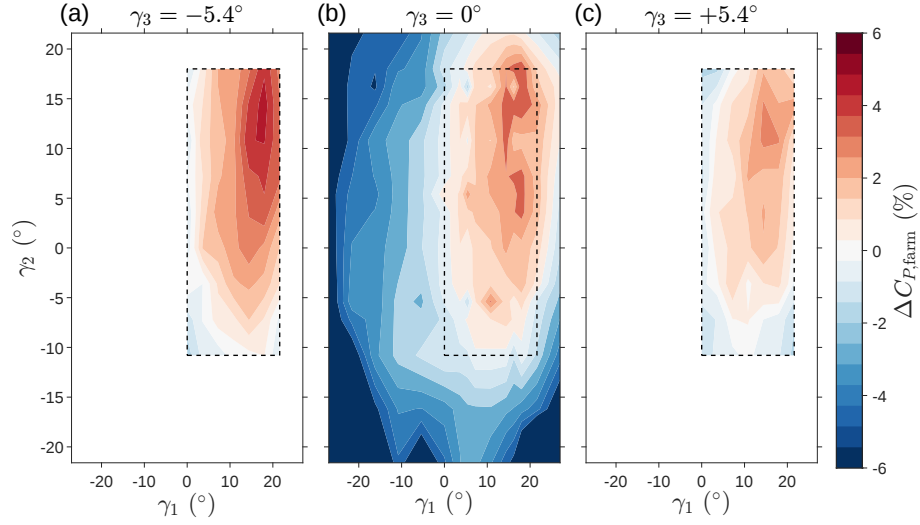


Figure 1: Change of farm power coefficient. This figure replaces Fig. 7 in the previous version of the manuscript.

red-white-blue, with white representing 0, would map power gains to red regions and power losses to blue regions. This will create a coherent region of power gains, clearly located on the positive side of the first-row yaw angles, and mostly on the positive side of the second row yaw angles.

Upon the suggestions of both Reviewers, we have plotted the data from Fig. 7 as a heatmap using a zero-centred, diverging colormap, show here in Fig. 1. Figure 17 has been similarly modified. We agree that this presentation provides a more intuitive understanding of the optimal configurations and it also better highlights the impact of changing γ_3 .

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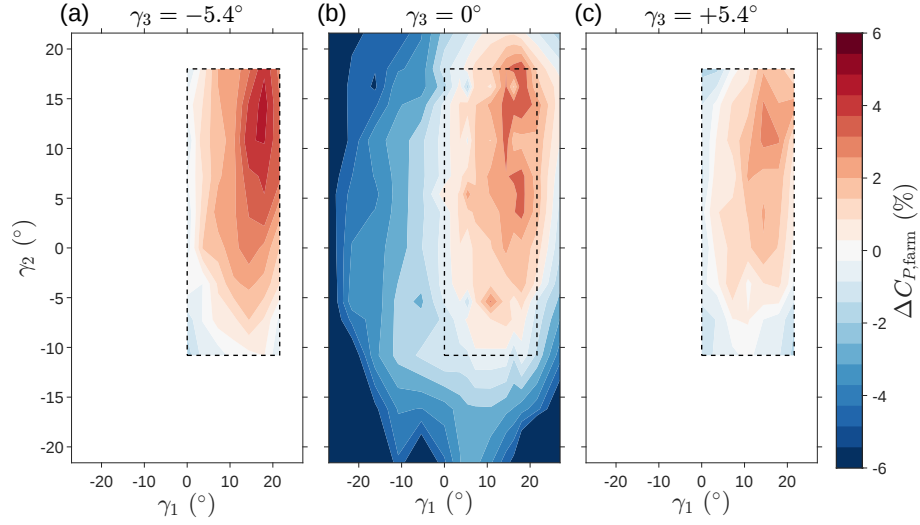


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