

Author comments in reply to anonymous referee #2

We thank anonymous referee #2 for their positive feedback on our revised manuscript and their useful comments on the same. We very much appreciate the time invested on a thorough review of our work. We have addressed each of the referee comments as detailed point by point below, which we believe address all of the reviewer comments. For brevity, comments on technical English are not shown here but will be indicated in the mark-up.

We hope our revised manuscript can be accepted for publication.

(Throughout this document, specific modifications to the revised manuscript are shown in blue)

Adithya Vemuri, on behalf of all co-authors

Specific comments

Language corrections:

Comment 2: *l. 267: “underpredict wind direction” → I am not sure what “underpredict” means in the context of the circular wind direction variable. I would suggest using something like cardinal directions (e.g. southwards shift or something like that) or terms like counter-clockwise shift to indicate the direction of the bias in wind direction.*

We have rephrased the statement to better point out the intended message.

Line 268: *Qualitatively, simulation runs 1 through 11 underpredict the fast changes in wind direction for the evaluation period, whereas wind speeds are underpredicted by all runs.*

Tables:

Comment 6: *Table 1: I think “physics parameters” is a bit misleading, since it is not single parameters but whole schemes/parameterisations that are changed as well. I would suggest something like “model settings and physics parameterizations”.*

The caption for Table 1 has been updated to:

WRF model setup and common parameters for all simulation runs. The varied model settings and physics parameterizations are highlighted in italics. Scale-aware physics parameterizations are underlined.

Figures:

Comment 7: *Figure 5, 6, 7: The gray lines of the individual ensemble members are very difficult to see and can be easily confused with the grid lines of the plot. I would suggest to make them a bit thicker or in a color of higher contrast.*

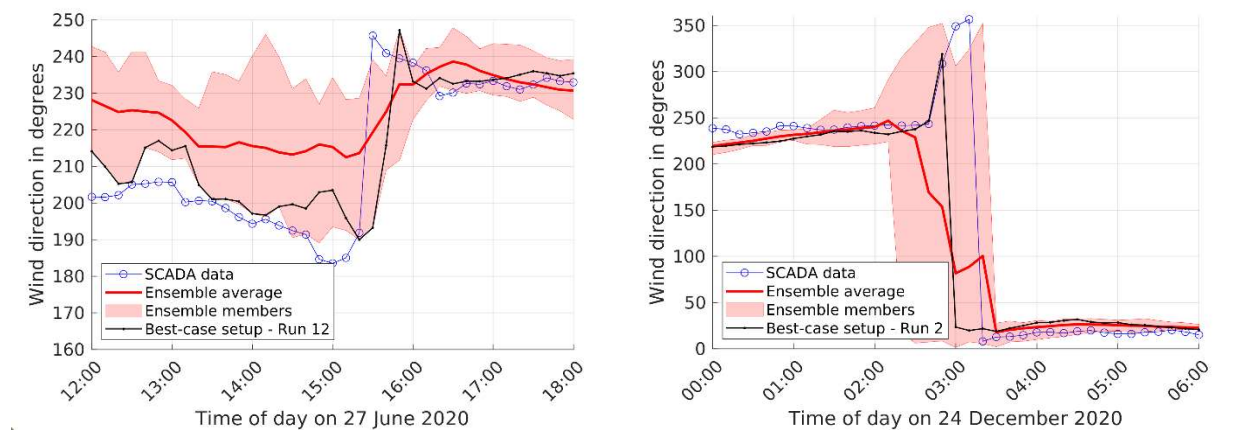
Thank you for the suggestion, we agree that the individual gray lines are difficult to see. However, making the individual ensemble members thicker resulted in a very disorderly figure. As a compromise, we have updated the plots to include the min-max envelope of the ensemble members, as indicated by the examples shown below.

Comment 8: Figure 6, 7, 13: It is very unusual within the wind energy community to represent wind direction in negative degrees (also since Figure 5 seems to use the 0 to 360 deg convention). Consider adapting to the 0 to 360 deg wind direction convention in the plots for consistency and readability.

Thank you for the suggestion, we have updated the plots to in a better manner, as indicated by the examples shown below.

Comment 9: Figure 5,6,7,13: While it is indirectly implied what the x-axis values mean, it would greatly improve readability and minimize confusion if a x label similar to Fig. 3 could be added.

Thank you for the suggestion, we have updated the plots to in a better manner, as indicated by the examples shown below.



Comment 10: Figure 7: Caption text (“best-case setup simulation run 2”) and figure label do not match (Best-case run 12). Please correct.

Thank you for pointing out the mistake, we have corrected the figure caption (shown here, an example for trough passage case):

Figure 7. Timeseries plots wind direction and wind speed plotted along with the ensemble average and best-case setup simulation run 12 for the case of trough passage. The minimum and maximum envelope of ensemble members is highlighted in light red. (a) Wind direction. (b) Wind speed.

Comment 11: Figure 8,9,10,11,12: While it was mentioned in the float text, I think it would be good to add also in the figure caption how the error bars are defined.

Thank you for the suggestion, we have updated the captions of these figures to include the definition of error bars. For brevity, caption for Figure 8:

Figure 8. Performance evaluation for simulation pair A considering change in update interval of LBCs, as described in Table 2. Error bars indicate one standard error of the sample mean. (a) MAE comparison for wind direction. (b) MAE comparison for wind speed.