Referee comment to revised version of

Title: Sensitivity analysis of mesoscale simulations to physics parameterizations over the Belgian North Sea using WRF-ARW
Author(s): Adithya Vemuri et al.

General comments:

Firstly, I would like to thank the authors for the very detailed, structured and polite replies to the previous comments. All my previously stated questions and remarks have been answered adequately and the revised manuscript version has improved significantly. The additional work is highly appreciated. Since there have been larger changes in the paper structure and figures, I found some additional minor comments to the revised manuscript (outlined below), especially for the time series figures. Generally however, I would suggest acceptance with minor revisions.

Specific comments:

<u>Language corrections:</u>

l. 124: Section 2 → Sect. 2 [for consistency with the following sentences], similar also for l. 232

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.

l. 367: "to highlighting" → "to highlight"

l. 383: "." too much before "("

l. 435: "," too much before scale-aware SH PBL

<u>Tables:</u>

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".

<u>Figures:</u>

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.

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.

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.

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

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.