Review report

Title: Dependence of Wind-Farm-Induced Gravity Waves and Wind-Farm Performance on Non-Dimensional Atmospheric Parameters and Simulation Configuration

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This study employs LES to examine the dependence of wind-farm-induced AGWs and wind-farm performance on simulation configuration and the four non-dimensional parameters. The authors found that simulation configurations that fully resolve AGWs yield the most realistic stratification effects on ABL flow and the wind-farm performance is most sensentive to the ratio of ABL depth to wind farm length. The paper is well written and the topic is both important and interesting. Overall, the manuscript is worth to be published. However, I still have two main concerns that I hope the authors to address. The first one is about the periodic condition in the spanwise direction, and the second one is how to define the most realistic result if all simulations vary when the configuration changes. Below are some specific comments and suggestions.

Detailed comments:

1. Line 117. Wave theory should not be the cause of wind-farm-induced AGWs.
2. Lines 137-138. Is there any theory or reference to support this statement?
3. Lines 168-169.Why the periodic boundary conditions can be used in the transverse direction? Note that there are only 5 turbines in the lateral direction with a spacing of three rotor diameters, while the domain size is 6 km in the y-direction.
4. Figure 2. Plot ten turbines in the figure is more consistent with the text.
5. Table 1. The ranges of some non-dimensional parameters are not consistent with that in Table 2 and Figure 6.
6. Title of Section 3.2. The symbol Cr should not appear first in the title and its definition should be specified.
7. Line 245. It should be explained in the text about how to estimate the reflection coefficient.
8. Table 2. Please explain more on how to realize the NFA-ABL case in simulation.
9. Figure 4. How can we judge that the CNBL with Lz=12km is the most realistic result if the result depends on simulation configuration?
10. Section 4.2. Similarly, if the result depends on the value of ξ, how to judge the correctness of the result? Or how to choose the value of ξ in practical simulations?
11. Figure 11. It is strange that the authors called the LES results as measured values and the deep-water approximation as calculated ones. In addition, how to get the results from the deep-water approximation?
12. Figure 16. The authors stated that wind-farm performance is most sensitive to the parameter Hi. However, this figure seems to indicate that wind-farm performance is most sensitive to the parameter Sh. This needs to be explained.