

Review: *The Actuator Farm Model for LES of Wind Farm-Induced Atmospheric Gravity Waves and Farm-Farm Interaction*

General Comments

This study analyzes the performance of a new wind turbine parameterization called the actuator farm model (AFM). The authors convincingly argue that the AFM can produce similar results as the widely known actuator disk model (ADM) but at coarser resolutions. This shows that the AFM is a very useful parameterization due to the fact that LES can be run at coarser resolution to accurately simulate large wind farms which saves on computational costs. There are many applications for the AFM model – one of which is modeling wind farm induced gravity waves – and it appears to be a parameterization worth further use and development by the scientific community.

I do not see any major issues with this study and have noted a few suggestions / minor revisions below. Thus, **I recommend the article for publication with minor changes.**

Major Revisions

None.

Minor Revisions

This paper feels very long. The introduction has information that doesn't seem relevant to the topic the paper is addressing. Additionally, there are a lot of tests that are included (the gravity wave tests feel like they could be a study on their own) and it makes it difficult to retain all of the significant findings. I'm not sure what the solution is for this, but if the authors have ideas of how to make the paper more concise, I think it would benefit the paper a lot.

Technical Suggestions

- The abstract is quite lengthy. Consider shortening it so readers can more easily find the key message.
- Some figures (e.g., 8, 9, 16, 17, etc.) are quite small and difficult to see the aspects that are discussed in the text. Consider changing the orientation of the panels or decreasing the number of panels to make the figures more legible