

## **RESPONSE TO REVIEW 1 (RC1, 26 Oct. 2023)**

Thank you for your constructive review of the manuscript. I am pleased to inform you that I have carefully addressed each of your comments to enhance the scientific quality of the research article. Specifically:

### **Literature Review:**

I have incorporated a comprehensive literature review in the introduction section, outlining existing research in the field of layout optimization. This addition highlights the novelty of our work and underscores the main differences between the developed optimization model and previously published models for both bottom-fixed and floating offshore wind farms.

### **AEP Methodology:**

I have included a short description of the methodology employed to determine the AEP and wake losses. Additionally, I have provided an equation illustrating the relationship between AEP and the two efficiencies—electrical losses and availability losses, addressing the factors impacting the model.

### **Optimization Algorithm:**

Chapter 2.3 now features an explanation of the applied optimization algorithm, including its methodology.

We are grateful for your suggestion regarding further constraints in the optimization tool. Your insight into including elements such as shipping routes, environmental protection areas, fishery zones, etc., is highly relevant and aligns with our consideration for future developments in the research. We will certainly explore these aspects to enrich the comprehensiveness of the wind farm layout development.

## **RESPONSE TO REVIEW 2 (RC2, 24 Nov. 2023)**

Thank you for your thorough evaluation and constructive feedback on our manuscript. I have incorporated the specific comments you provided into the manuscript. For the general comments you raised:

### **AEP Methodology:**

I have included a description of the AEP methodology in the manuscript. The wake model used is the Bastankhah and Porté-Agel wake model, chosen for its balance between computational efficiency and accurate far wake modelling. The potential AEP was computed using the PyWake Python library.

### **Code Availability:**

While I appreciate the importance of open-source methods, at this moment, the code is not planned to be made publicly available.

### **Conclusion Modification:**

I have revised the conclusion to comprehensively cover all aspects of the paper, including the objectives, methods, and an overview of the results.

## LIST OF ALL RELEVANT CHANGES

- Literature review added.
- Figure 1: x-y axis normalized.
- Elaboration of the AEP calculation methodology (tools, wake loss model).
- Equation AEP-efficiencies added. Clarification of how the losses were computed.
- Description of the process and methodology of the optimization algorithm.
- Mention of the intentional omission of the dynamic behavior of the mooring system.
- Figure 2: Legend added on the right subplot. Color bar title and units added for the left subplot.
- Figure 3: Clarification of the legend.
- Equation 11: Adjustment of the equation for two entities.
- Elaboration on the number of OSS chosen to compute Figures 5 and 6.
- Additional remarks: elaboration on the mooring distance constraint values + comment on the grid layout used in Section 3.
- Adjustment of the conclusion with the paper's objectives, the methods used and the main results.