Interactive comment on "Wind farm layout optimization using pseudo-gradients" *by* Erik Quaeghebeur et al.

Anonymous Referee #1

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After a first look to the paper, I accepted to contribute with my comments since I considered the issue highly relevant for the wind energy community and because I though, after that preliminary look, that I could contribute with useful comments about the wake models used, the implemented wind turbine models or the goal optimisation functions selected. After a first look to the paper I accepted to contribute with my comments since the issue is highly relevant for the wind energy community and because I though, after that preliminary look that I could contribute with useful comments about the wake models used, the implemented wind turbine models or about the goal optimisation functions selected.

After a detailed reading of the work, I have realised that the paper is 90% focused of purely abstract aspects of the new proposed optimisation method and associated

algorithm.

The paper contains very few, and also highly abstract, references to the physical models implemented (wakes, wind turbines). The authors present results on wake losses reductions after the application of their model to different well established cases studies, and they seem very promising.

However, in my opinion the paper should be mainly reviewed by experts in pure abstract aspects of optimization algorithms who would determine if this approach is really new, relevant and efficient as the authors claims. Personally I only could contribute with general comments (positive in general).

Without a detailed analysis of thet abstract mathematical details of the proposed model, I would say that the issue is relevant since, as the authors claim, their optimisation method does not require massive evaluation of goal functions, that can be computationally expensive in wind farm layout optimisation process.

They conceptually compare the proposed method with other approaches for wind farm layout optimisation, such as genetic algorithms (which require a high number of goal function evaluations). However, they do not include, for instance, a quantitative comparison about computational times or wind farm efficiency gains. This comparison would improve the quality of the paper.

The presentation of the models seems to be detailed and complete from a formal point of view, with an acceptable number of references.

On the other hand, the formal presentation quality seems high. The scientific results and conclusions presented are well written, clear and concise. Figures and tables are well presented.

My opinion on this paper would not determine a final acceptance/rejection decision. A deep review by expert's eyes of the optimisation method formalism is recommended. If this review if positive, I would recommend to accept the paper.

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